PREFACE

This report is written to comply with Subsection 319(h)(11) of the Clean Water Act (CWA), which requires each state to report to the United States Environmental Protection Agency (EPA) on an annual basis regarding (A) its progress in meeting milestones listed in the State Management Program (SMP); and (B) to the extent appropriate information is available, reductions in nonpoint source (NPS) pollution loading, and improvements in water quality resulting from implementation of the management program.

The report documents the activities and accomplishments of the Nevada Division of Environmental Protection (NDEP), Nonpoint Source Pollution Management Program (NPS Program) and other state, federal, and local agencies in addressing NPS issues in Nevada. The reporting period for these activities, **July 1, 2012 through June 30, 2013,** coincides with the State Fiscal Year (SFY) 2013. During this time the Nevada NPS Program operated under the Federal Fiscal Year (FFY) 2011 work plan and funding (Grant C9-979081-12). Activities referenced, including the preparation of this report, were funded through Subsection 319(h) of the Clean Water Act (CWA) via the United States Environmental Protection Agency (EPA).

Cover photo:
Lake Tahoe
By Dana Tuttle
Douglas County, NV

NONPOINT SOURCE POLLUTION IN NEVADA

Nonpoint source pollution – the most common type of pollution in our nation's waterways today – is caused by rainfall and snowmelt moving over and through the ground, which can carry pollutants from a diffuse range of sources into lakes, rivers, wetlands, coastal waters, and aquifers. These pollutants can include sediment, fertilizers, salts, pesticides, and herbicides from agricultural and residential land; oil and other toxic runoff from industrial and energy production; and bacteria and nutrients from livestock or faulty septic systems.

Although it is the leading cause of water quality problems in Nevada, controlling nonpoint source (NPS) pollution remains a challenge. Sources are difficult to locate and the effects of NPS pollutants on specific waters vary and may not always be fully assessed. However, we do know that these pollutants can have harmful effects on drinking water supplies, recreation, fisheries, and wildlife.

In 1989, with authority under the Clean Water Act, the U.S Environmental Protection Agency (EPA) approved the State of Nevada Nonpoint Source Pollution Management Program (SMP), which created the basis for Nevada's NPS Program. The 1989 SMP was updated in 1999 to include EPA's required Nine Key Elements. This enabled the State to receive augmented NPS program funding through EPA's Clean Water Action Plan Program. The draft update of the State Management Plan was submitted to EPA on October 24, 2013. This annual report still reflects the priorities identified in the 1999 SMP. Nevada Division of Environmental Protection currently administers the SMP within the Bureau of Water Quality Planning, Nonpoint Source Program Branch.

NPS Categories of Pollution

The 1999 SMP identified the following original NPS Categories of Pollution to be addressed by the plan:

Agriculture
Silviculture
Construction
Urban Runoff
Hydrologic and Habitat Modification

Agricultural Land Uses

Most of the agriculture conducted in Nevada is cattle grazing on public lands or some combination of private and public lands, some irrigated crop production, and some animal feedlot operations. Nevada's agricultural sector is dominated by beef and hay production, with more than half of the farms in the state producing either sheep or cattle. More than 82% of the state's land area is covered with rangelands. Nevada's desert climate, while not conducive to some kinds of agricultural production, is ideal for the production of high quality alfalfa hay. This hay comprises more than half of the total crop value for the

state, and it is largely sold to neighboring California to provide feedstock for dairies, or else shipped around the world.

The main subcategories of activities that present potential for nonpoint source pollution contribution in Nevada are: irrigated crop production, pasture land, range land, feedlots, and animal holding/management areas. Hay production is the main crop in Nevada and uses the largest amount of irrigated land. Return flows, runoff and leachate from irrigated lands may transport sediment, organic compounds, nutrients, pesticides, salts, metals, bacteria, viruses and other micro-organisms to surface and ground waters. Livestock containment facilities can also contribute sediments, bacteria, viruses and other microorganisms, oxygen-demanding substances, nitrogen and phosphorus. Grazing can lead to riparian area damage and channel instability; it also provides direct input of nutrients to stream channels.

Silviculture

Silvicultural-related activities that occur in Nevada include harvesting, reforestation, residue management, road construction/maintenance and forest management. Pollutants of primary concern are sediment, nutrients, pesticides and herbicides. Although silvicultural activities are limited in Nevada, they generally take place on lands that contain streams of extremely high water quality.

Construction

Construction activities including highway, road and bridge construction and maintenance and land development activities have the potential to cause long-term nonpoint source impacts. Sediment and nutrients are pollutants of primary concern during construction activities. Runoff from highways and roads may contain sediment, nutrients, pesticides, metals, petroleum products and de-icing agents. Highway, road and land developments disturb large land areas, remove native vegetation, destroy valuable wetlands, and increase areas of impermeable surfaces. The NPS program coordinates with the NPDES Stormwater program regarding construction activities. Due to the economic downtown following 2007, Nevada has seen a substantial reduction in construction activities. Another side effect, however, are partially built or barren incomplete construction sites that pose more of a long term impact on nonpoint source issues such as sediment erosion than expected.

Urban Runoff

Nevada's land use is characterized by vast areas of land containing sparsely distributed small rural communities and agricultural activities; and two major population centers, the Las Vegas/Henderson and the Reno/Sparks/Carson City urban areas. It is in these two latter areas that urban runoff presents the most significant threat to water quality. In the most arid state in the Union, storm events are infrequent. However, when they do occur, significant volumes of surface runoff are generated, which flush impervious surfaces. Although these runoff events are of short duration, the water quality impacts can be severe. Dry weather urban runoff is increasing, especially in Las Vegas, due to landscape irrigation and dewatering practices. Urban runoff may contain a variety of pollutants including sediment, nutrients, pesticides, petroleum products, metals, and suspended and dissolved solids; it also causes temperature oscillations, which can be very detrimental to fish and wildlife.

Hydrologic and Habitat Modification

Hydrologic and habitat modifications include a variety of activities which alter the hydrology and wildlife habitat associated with wetlands and riparian areas. These activities include channelization, dredging, development, dams/impoundments, flow regulation and modification, stream bank modifications, and destruction of riparian vegetation. Such activities can produce water quality degradation due to sediment, nutrients, dissolved solids, thermal alterations and other chemicals that may be sorbed to soil particles (for example phosphorus and mercury). These activities also disturb the land and create favorable circumstances for establishment of invasive and opportunistic weeds. In Nevada, the conversion of wetlands to agricultural lands and to urban development is especially of concern. This process has an indirect detrimental impact on water quality because it eliminates the water quality benefits provided by wetlands. Pollutants of primary concern which are generated by these modifications include sediment, nutrients, pesticides/herbicides, dissolved solids, coliform and pathogen, metals, and elevated temperatures.

The Nevada Paradigm

Nonpoint source pollution remains the biggest threat to the quality of Nevada's waters. The Nevada Division of Environmental Protection's Nonpoint Source Management Program is dedicated to minimizing and eventually eradicating that threat. Nevada, the driest state in the union, faces unique nonpoint source challenges due to arid landscapes, concentration of population centers, and a large remote, unpopulated land mass held in trust by public land agencies. 2012 and 2013 brought severe to extreme drought to most of the state and with the drought came wildfires that consumed over hundreds of thousands of acres of rangeland. Certainly, Nevada currently faces unprecedented resource and economic challenges to overcome. This report outlines the significant achievements of Nevada's NPS program over the past state fiscal year. In this time of shrinking budgets and shifting priorities, the NPS Program at NDEP continues to strive to reduce nonpoint source pollution in Nevada with the resources we are allocated.

NPS PROGRAM PRIORITIES

Priorities

Program Mission and Goals from SMP

Nevada's Nonpoint Source Program priorities include implementing the program mission statement and goals as outlined in the 1999 SMP. They are:

The mission of NDEP's NPS Program is to: Prevent, control, and abate the impacts of NPS pollution on the quality of the state's surface and ground water through source reduction, improved land use management and the implementation of best management practices.

The State Management Plan (SMP), approved by EPA in 1999, provides the basic structure and guidance for the Nevada NPS Program and identifies three major goals:

Goal #1: *Achieve a downward trend in pollutant loads due to NPS pollution for CWA Section 303(d)-listed waters; focus on the five top priority watersheds; and have in place Total Maximum Daily Loads (TMDLs) and/or Coordinated Resource Management Programs (CRMPs) in these watersheds within the next fifteen years.*

Goal #2: *Educate and involve Nevadans about appropriate water quality protection activities related to priority nonpoint sources, focusing on urban issues and on riparian area health.*

Goal #3: *Coordinate water quality activities with a broad range of state, federal, local agencies and Tribes, to achieve implementation of Best Management Practices (BMPs) associated with priority NPS categories.*

To meet the three main goals of the SMP, management strategies are developed on a watershed basis and specific objectives and milestones needed to meet each goal are developed as the workplan submitted with Grant C9-979081-12. A major strategy for meeting the goals and objectives is through program support for locally-led efforts and projects in these major watersheds. The Nevada NPS Program continued its public education and outreach efforts with much success throughout the state. The Nevada NPS Program worked with numerous management agencies at all levels to develop and implement NPS projects throughout the state. Activities and accomplishments to fulfill the SMP objectives and milestones are outlined in the report that follows. More detailed information regarding each activity has been provided in the quarterly reports.

Priority Watersheds

Furthermore, the NPS Program prioritizes nonpoint source pollution management and control in priority watersheds, which comprise many of the major drainage basins in the state. The priority watersheds include:

1) The Colorado River region makes up 12,376 square miles of Nevada. The Colorado River provides for hydroelectric power, recreation at Lake Mead and Lake Mohave and water for agricultural, industrial and municipal use. The large municipal areas of Clark County, Las Vegas, North Las Vegas and Henderson, are located here. The municipal areas comprise the Las Vegas Wash. The Colorado flows generally south, along the Arizona and California border and eventually drains into the Gulf of California in Mexico.

2) The Humboldt River is the longest river in Nevada; the entire Humboldt basin is contained within the state. Its headwaters are located in the Ruby, East Humboldt, Independence and Jarbidge mountains; it flows in a westward direction across northern Nevada and terminates in the Humboldt Sink. Industry in the region is predominantly agriculture and mining, with many small rural communities located along a major transportation corridor which parallels the entire length of the Humboldt River.

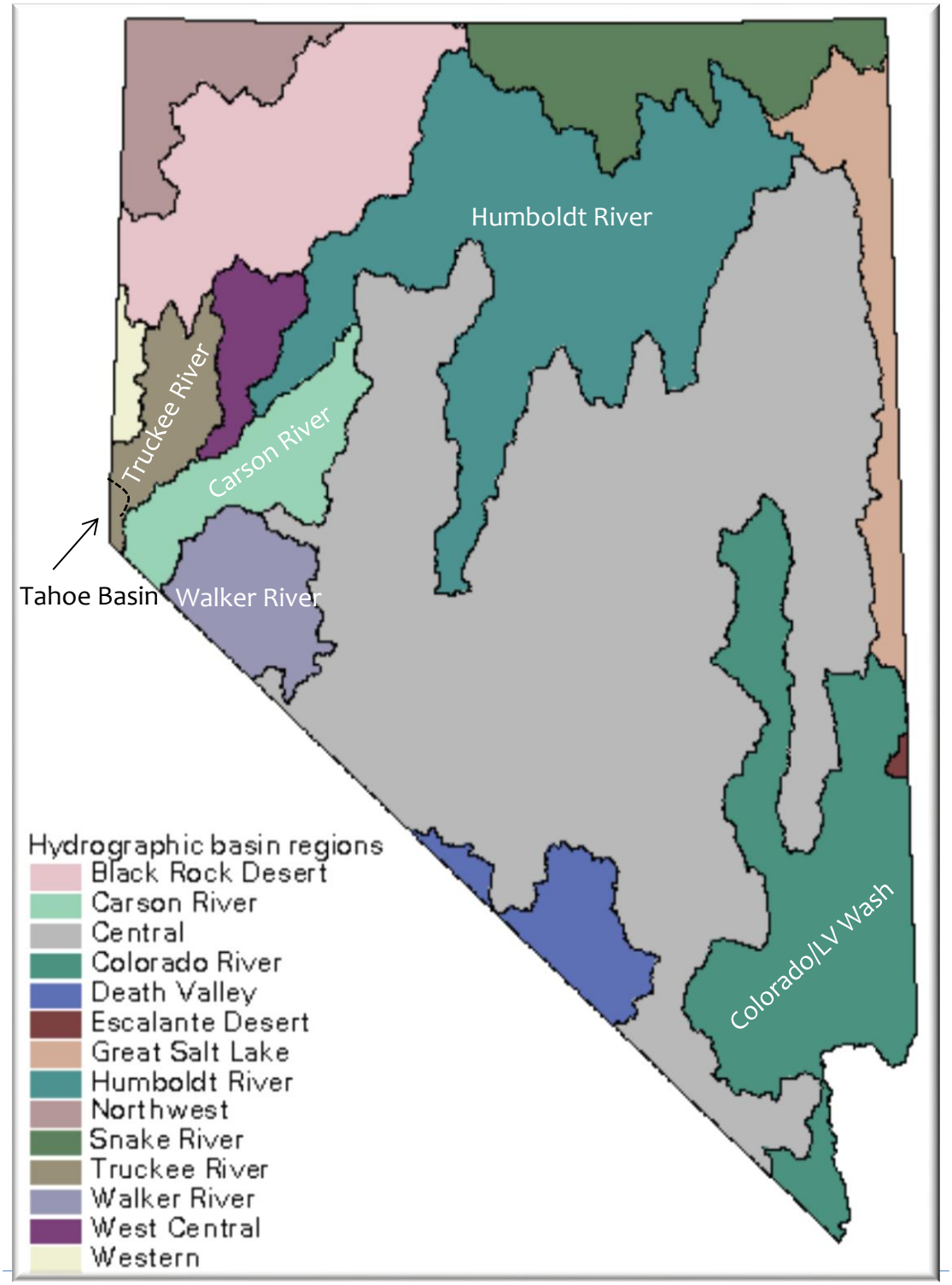
3) Lake Tahoe is a large alpine lake located on the California-Nevada border in the Sierra Nevada Mountain Range. The lake is situated at an elevation of 6225 feet with a surrounding landscape that rises to 10,881 feet. Sixty-three streams, including the Upper Truckee River, flow into Lake Tahoe. Lake Tahoe's water is utilized for recreation, wildlife, fisheries and municipal use. Lake Tahoe's one outlet flows into the Truckee River.

The Truckee River flows from Lake Tahoe and drains a portion of the eastern slope of the Sierra Nevada. It flows east through the cities of Reno and Sparks and terminates in Pyramid Lake. Along its course, the river provides water for municipal, industrial and agricultural uses, for hydroelectric power generation, recreation and fisheries including the support of endangered species of fish.

4) The Carson River drains the eastern slopes of the Sierra Nevada immediately south of Lake Tahoe and terminates in the Carson Sink. Along its course, water is utilized for agricultural supply, and for recreation, wildlife and fisheries.

5) The Walker River originates in California and drains the eastern slopes of the Sierra Nevada to the south of the Carson River. It flows through mostly agricultural lands, in the Smith and Mason Valleys and through the Walker River Indian Reservation, before terminating in Walker Lake.

Figure 1: Nevada's Hydrographic Regions with Priority Watersheds



Programmatic Priorities

Partnerships and Collaboration

Nevada's Nonpoint Source program is voluntary, multifaceted, and is based on public education/outreach, technology transfer, implementation of Best Management Practices (BMPs) and demonstration projects. Successful implementation of the program requires broad-based public awareness, development of practical solutions and effective coordination among numerous federal, state, local and private entities. Nevada's nonpoint source program is implemented on a watershed basis with participation and collaboration of the local community. NDEP has developed and will continue to strengthen partnerships with myriad groups, such as technical advisory committees, informal community-based groups, educators, tribal governments, Coordinated Resource Management Planning (CRMPs) groups, Conservation Districts, interstate watershed task forces, and watershed planning groups.

Implementation of Workplan Activities

The main activities that were described in the SFY 2013 workplan included:

1) Approval of the Lake Tahoe Basin TMDL and review of the Truckee River TMDL.

2) Development of a Lake Tahoe Basin Stormwater Load Reduction Plans for Washoe and Douglas Counties and the Nevada Department of Transportation that contains the nine elements required by the 2004 Guidelines.

3) Continued implementation of a Carson River Stewardship Plan in the Carson River basin; implementation of restoration and watershed protection projects in other priority basins; implementation of BMP effectiveness monitoring projects.

4) Implementation of statewide and priority watershed public education programs.

5) Continuation and solidification of federal, state and local interagency coordination efforts.

Education and Outreach

Educational programs are the primary tool that NDEP uses to prevent NPS pollution to enter the surface and ground waters. At the watershed and community levels, education outreach is accomplished through the implementation of education projects that address watershed specific issues and educate several targets audiences. The NPS program has established relationships with several technical experts and educators, including the UNR Cooperative Extension, several Conservation Districts, the Carson Water Subconservancy District, the Nature Conservancy, Sierra Nevada Journeys, Nevada Outdoor School, and Great Basin Outdoor School. It is mainly through these relationships that the educational component of the nonpoint source program is implemented. NDEP has allocated significant resources to the educational component of its nonpoint source program, including the funding of one Full Time Equivalent staff person whose time is dedicated to NPS pollution prevention education.

NDEP has developed a general educational framework of programs for nonpoint source activities across the State. Initially developed to address two priority NPS categories: agriculture and urban runoff, programs now primarily target urban runoff and riparian habitat issues. Educational programs continue to be implemented in the Carson River and Truckee River priority watersheds; however efforts are expanding to include the Humboldt and Walker River Basins. Urban runoff-related educational programs are implemented in the Tahoe Basin, in Clark County (North Las Vegas, Las Vegas and Henderson), and in Washoe County. The implementation of these efforts is accomplished through 319(h) projects and in collaboration with UNR - Cooperative Extension educators and other entities with similar education goals that were previously mentioned.

NPS PROGRAM ACCOMPLISHMENTS

Workplan Accomplishments

Lake Tahoe TMDL

Interlocal Agreements to Implement the Lake Tahoe TMDL were entered each with Douglas County, Washoe County and the Nevada Department of Transportation. A draft Lake Tahoe Management System Handbook was produced and is currently being used to pilot operations, produce products and refine both.

Lake Tahoe Nevada Stormwater Load Reduction Plans

Baseline conditions analyses for each of the Nevada urban stormwater jurisdictions were completed and a final Technical Memorandum was delivered. The exiting conditions analyses were initiated.

Truckee River TMDL Review

NDEP began reviewing existing Truckee River water quality standards. As part of the Lahontan Reservoir water quality standards review, NDEP solicited input from stakeholders through a series of presentations. Additionally, NDEP performed summer water quality monitoring of the reservoir.

TMDL/watershed based plan Implementation in the Carson River and Lake Tahoe Basins

TMDL/watershed based plans for the Carson River and the Lake Tahoe Basin were implemented through initiation and continuation of projects and contracts. This detailed information is found by watershed later in this report.

Implementation of restoration and watershed protection projects in other priority basins; BMP effectiveness monitoring projects; statewide and priority watershed public education programs; and federal, state and local interagency coordination efforts

Detailed information for these tasks is found by watershed later in this report.

Load Reductions

Load reductions were reported and entered into EPA's Grants Reporting and Tracking System (GRTS) on February 15, 2013. The load reductions numbers reported (for the 2012 calendar year, half of which falls into SFY13) were:

Nitrogen, LBS/YR	**276,559**
Phosphorus, LBS/YR	**78,361**
Sedimentation-Siltation, TONS/YR	**11,179**

SMP Update

During State Fiscal Year (SFY) 2013, Nevada NPS staff completed the draft State Management Plan and submitted it for EPA's review on October 24, 2013. Once EPA responds the draft will be revised and reviewed for finalization.

Fiscal Summary

Contract C9-97908109 (FFY 2008) terminated in September, 2013. All funds were expended. Of the remaining open grants, FFY 2009 is completely obligated in subcontracts. FFY 2010 currently has approximately $285K and FFY 2011 has about $269K after the last round of contracts were awarded in the SFY 2013 Request for Proposal process.

FFY 2009 C9-97908110 (10/01/09 – 09/30/14)
All contract funds obligated

FFY 2010 C9-97908111 (10/01/10 – 09/30/2015)
$284,602.42 unobligated projects funds

FFY 2011 C9-9790812 (10/01/11 – 09/30/16)
$269,058.52 unobligated projects funds

FFY 2012 C9-97908113 (10/01/12 – 09/30/2017)
$162,960.00 unobligated projects funds

It is expected that most if not all of the funds will be obligated in the next round of contracts in SFY 2014.

A Request for Proposals (RFP) was announced July 20, 2012 and closed on September 7, 2012. The awardees were as follows:

Table 1: 2012 319(h) Awardees

Implementation Projects

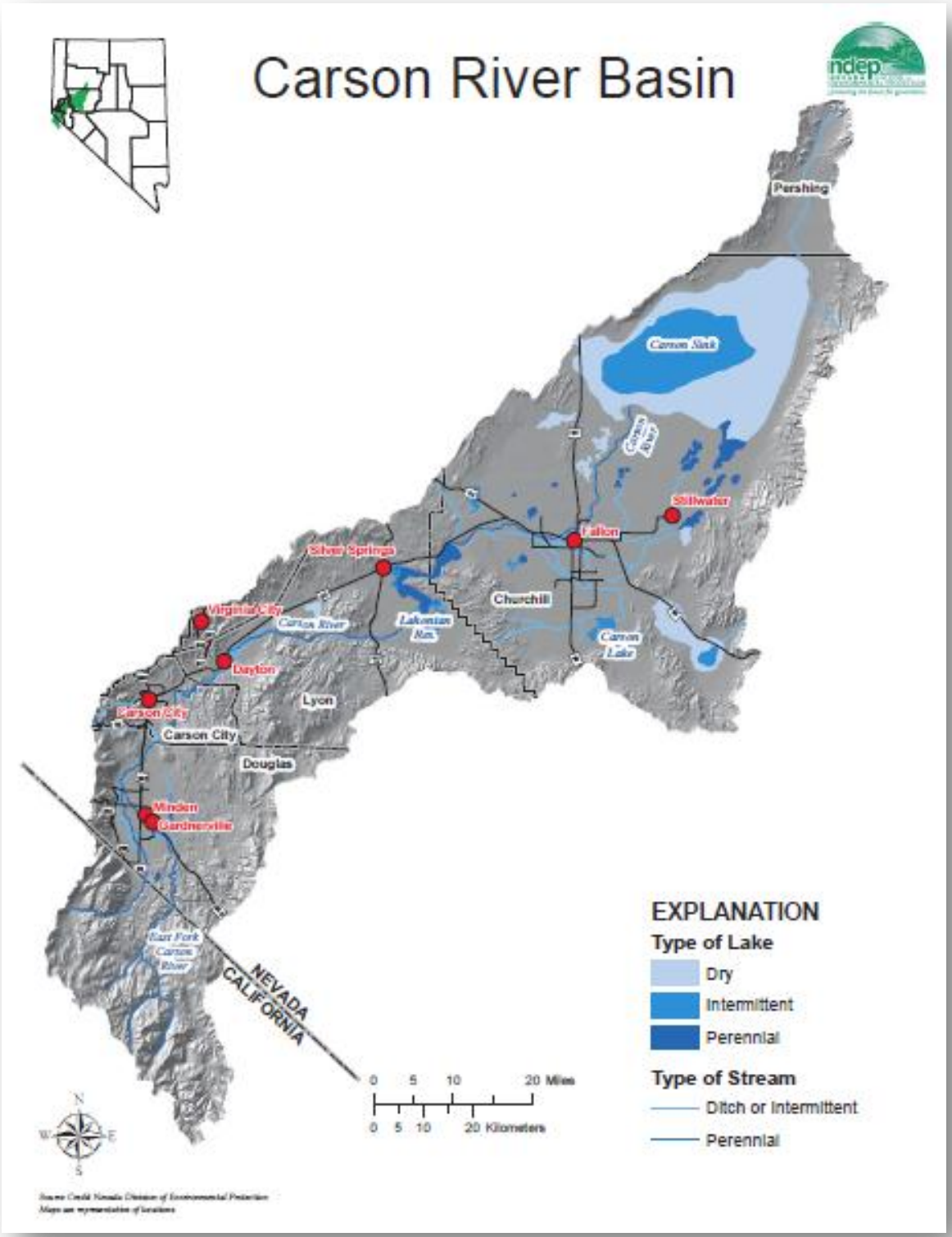
Applicant	Project Title	319 Funding
Carson City Open Space	Ash Canyon Road Erosion Control	$10,000.00
Clark County Water Reclamation District	Dog Waste Collection Program	$39,063.00
Dayton Valley Conservation District	Middle Carson River Restoration and Rehabilitation	$200,000.00
Mason Valley Conservation District	Walker River Bank Stabilization, Snyder Location	$27,430.00
Nevada Tahoe Conservation District	2012 Integrated Residential BMP Strategy	$95,000.00
Southern Nevada Water Authority	Initiatives to Reduce NPS Pollution 2013	$40,500.00
Tahoe Regional Planning Agency	Implementation of Private Parcel BMPs TMDL Goals	$198,378.00
Washoe County Community Service Dept.	Washoe County Tahoe Basin High Efficiency Sweeper	$200,000.00

Public Education Projects

Applicant	Project Title	319 Funding
Great Basin Outdoor School	Education & Action for Tahoe Water Quality	$57,912.00
Nevada Outdoor School	Rural Nevada Gets W.E.T. (Water Education for Teachers)	$12,143.00
Sierra Nevada Journeys	Watershed Education Initiative	$35,822.00
The Nature Conservancy	Community Outreach Program at River Fork Ranch	$25,136.00
University of Nevada Cooperative Extension	Training Contractors in BMP Installation	$25,000.00
	TOTAL	**$966,384.00**

Priority Watershed Activities

Nevada's 1999 SMP designates priority watersheds in Nevada; including the Carson River, the Humboldt River, the Colorado River/Las Vegas Wash, the Tahoe Basin, the Truckee River/Steamboat Creek and the Walker River watersheds. It should be noted that the priority watersheds coincide with the major population centers in the state, and represent areas of greatest private land holdings and significant nonpoint source threats. Many of Nevada's larger hydrographic regions are located in underpopulated and remote areas held in Federal land ownership (the Bureau of Land Management and the United States Forest Service.) Nevada's NPS program works closely with these Federal land stewards to partner on projects and develop land use planning that is protective to Nevada's water resources.


Carson River Basin
Pershing
Carson Sink
Stillwater
Fallon
Silver Springs
Churchill
Virginia City
Carson River
Lahontan Res.
Canvas Lake
Dayton
Lyon
Carson City
Douglas
Minden
Gardnerville
East Fork Carson River
NEVADA
CALIFORNIA
0 5 10 20 Miles
0 5 10 20 Kilometers
EXPLANATION
Type of Lake
Dry
Intermittent
Perennial
Type of Stream
Ditch or Intermittent
Perennial

Carson River Watershed

Activities in the Carson River watershed are carried out under the auspices of the May 2007 Carson River Watershed Adaptive Stewardship Plan (CRWASP) prepared in most part by the Carson Water Subconservancy District. The CRWASP was approved by EPA as a watershed based plan meeting the "nine elements," and is a "living document" that is updated and revised every three years. Management plans for the Upper, Middle and Lower Carson River are incorporated in the CRWASP (previously covered by individually prepared Coordinated Resource Management Plans [CRMPs].) The activities implemented during SFY 2013 follow.

Key Watershed Partners

Carson Valley Conservation District
Carson Water Subconservancy District
Dayton Valley Conservation District
Fallon Paiute-Shoshone Tribe
Nevada Division of State Lands
River Wranglers
The Nature Conservancy
Washoe Tribe

Pollution Category, Subcategory, and/or Sources of Pollution Addressed

Agriculture
Construction
Urban Runoff
Hydrologic and Habitat Modification

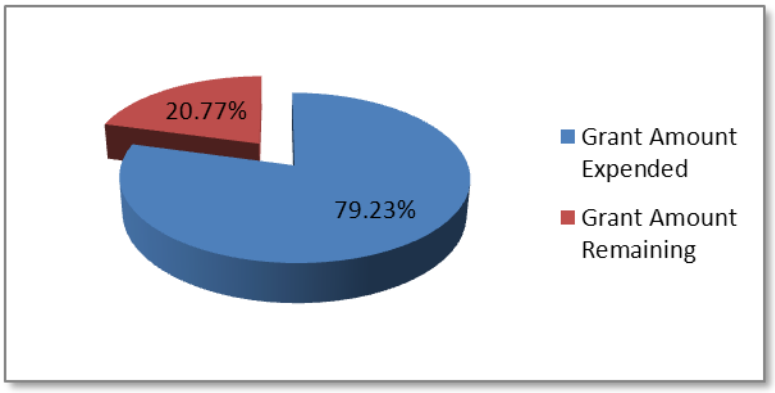
Project title and Contractor: **Community Outreach Program at River Fork Ranch**
DEP CC# 11-027 The Nature Conservancy

Primary Contact: Duane Petite dpetite@tnc.org (775) 781-3505

Project Location: Douglas County, Carson City, Lyon County
8-Digit USGS HUC: Upper Carson 16050201, Middle Carson 16050202

Project Summary: 319(h) funds awarded $50,000.00
Total amount of non-federal match funds $50,000.00
Total Project Cost $100,000.00

Total Grant Reimbursements through June 30, 2013: $39,613.33



Start and Completion Dates 6/14/11 – 06/30/14 (amended)

Fiscal Summary: 319(h) funds awarded $50,000.00
Total amount of non-federal match funds $50,000.00
Total Project Cost $100,000.00

Project Partners:

- Carson Water Subconservancy
- Douglas County
- Douglas County School District
- Audubon Society
- University of Nevada Cooperative Extension
- Great Basin Sports
- US Bureau of Land Management
- Washoe Tribe of California and Nevada
- Carson Valley Trails Association
- US Forest Service
- Birding Under Nevada Skies
- River Wranglers

Background The Nature Conservancy works with both the Carson River Coalition's Education and River Corridor working groups to develop and implement education and outreach programs. This grant funding provides the ability to expand their participation and outreach in developing and implementing an educational programs based at the Whit Hall Interpretive Center (WHIC) at River Fork Ranch.

Project Description, Goals and Objectives

1 Schools participate in a watershed education program aligned with core curriculum standards that provides an opportunity to gain greater appreciation of the Carson River Watershed through a series of grade level units and field trips to River Fork Ranch.
2 Community programs serve multiple ages and typically underserved groups including the Washoe and Hispanic communities, senior citizens, and disabled persons.
3 Programs are based at WHIC; a LEED certified building constructed using low impact sustainable materials, and designed with both indoor and outdoor learning spaces.
4 Programs integrate habitat restoration and public access interpretive trail projects along the Carson River at River Fork Ranch.
5 Programs are consistent with the Carson River Adaptive Stewardship Plan, and include content on water quality, habitat conservation, floodplain awareness, river stewardship, and recreational and agricultural use and management.

Progress in SFY 13

Work is ongoing to develop **web-accessible education materials** for teachers, parents and group leaders. Online water education materials which will be available beyond the life of the grant. The TNC environmental education website entitled Nature Works Everywhere is fully operational and fully accessible at http://www.natureworkseverywhere.org/. Currently, the lessons are focused on grades 6 through 8. The overall theme is that Natures Works by providing ecosystem services Everywhere both locally and globally. As said on the site, Nature is more than just a faraway beach or mountain. In fact, it's a fantastic factory that makes the building blocks of all our lives – food, clean water, the stuff we own and the air we breathe. Nature makes amazing memories but it also protects us from floods and pollution. In the water section, accessed at http://www.natureworkseverywhere.org/lesson-plans/water , emphasis is on how forests, soil, rivers and clouds team up to produce the clean water upon which all life depends. One lesson plan of particular interest is at http://www.natureworkseverywhere.org/lesson-plans/how-natural-areas-filter-water. Through the Engage & Interact button on the home page, you can connect directly with the River Fork Ranch webpage which is updated with current field trip information and links to additional teacher/parent resources.

Continued collaboration with the Douglas County School District (DCSD) and their **alternative high school Aspire Program** to bring students to River Fork Ranch for lessons in the critical role that natural freshwater communities play in filtering non-point source pollutants, reducing erosion and providing important habitat for aquatic, avian and terrestrial species. The Aspire students applied their nature interpretation skills and water quality monitoring techniques serving as mentors to elementary students.

Collaborated with the **Douglas High School** to bring three Ag and Natural Resources students to River Fork Ranch several hours each week as **interns** where they engage in service learning projects.

Collaborated with the **local Cub Scout summer camp** to bring 130 Scouts to River Fork Ranch on June 13 where they participated in a "nature treasure hunt" that explored the preserve's wetlands, meadows and riparian areas, learned about the critical role of natural freshwater communities and then engaged in a service learning exercise where they harvested and planted native willows and cattails to restore riparian and wetland habitat at the preserve.

Collaborated with the Carson Water Subconservancy District to co-host the **Get On The Bus Carson River Watershed Tour** visit to River Fork Ranch on June 13.

Collaborated with CVTA on a **"Hike For Health"** event at River Fork Ranch on June 15. Participants were given an orientation to freshwater ecosystems, non-point source pollution and invasive species in the Carson watershed and given hiking tours of existing riparian, meadow and wetland habitat as well as areas undergoing active habitat restoration along the Brockliss Slough and West Fork of the Carson River.

In collaboration with **USFWS** and others, TNC coordinated the efforts of students, staff and parent volunteers at Gardnerville Elementary School (GES) to design and build a "**schoolyard habitat**" at the school. The schoolyard habitat is an "outdoor classroom" that offers many teaching and learning opportunities across the curriculum in English, science, mathematics, history, geography, social studies and art. The process of planning, creating and carrying for a schoolyard habitat exposes children to unique hands-on experiences. Just like the Carson Valley area itself, the schoolyard habitat at GES features a central wetland and riparian area bordered to the east and west with plants and trees from Great Basin and Sierra Nevada ecoregions respectively. Many local business donated supplies, equipment and staff to help with the heavy equipment phases of the project. The project is planned through multiple phases and will change over the years as children from various classes build upon the existing work of past students. Throughout April TNC volunteers and staff presented grade level appropriate classroom lessons on local natural communities and the role they play in filtering non-point source pollutants, reducing erosion and providing important habitat for aquatic, avian and terrestrial species. In April in celebration of Earth Day, with assistance from the DHS Environmental Club, over 550 GES students from every class in every grade level pre-K through 6, planted native shrubs, trees and wetland vegetation in their schoolyard habitat. On May 7, the students presented their newly completed project to over 400 parents and family members attending a schoolyard habitat coordinated biome themed student art show.

Volunteers at Gardnerville Elementary School build a schoolyard habitat.

Collaborated with SNJ to bring 25 students from the **Carson City Middle School Gifted and Talented** Program to River Fork Ranch on May 10 where they participated in service learning opportunities and rotated through a variety of educational activities that explored the preserve's wetlands, meadows and riparian areas.

Collaborated with partners and community volunteers to bring 90 Gardnerville Elementary School first grade students to River Fork Ranch on May 23 where they participated in a facilitated interactive "nature treasure hunt" that explored the preserve's wetlands, meadows and riparian areas.

Collaborated with the **Genoa Cowboy Poetry Festival** to plan and facilitate an equestrian tour of River Fork

Ranch on May 5, 2013.

Collaborated with the **Daughters of the American Revolution** John C. Fremont Chapter to plan and present a program for 20 Chapter members on March 16, 2013 at the Whit Hall Interpretive Center on noxious weed identification and control.

Organized a series of six **"Picnic for the Planet"** events in the upper Clear Creek watershed that engaged local corporations and their staff in the subject of freshwater conservation. On April 11, 20, 22, 26, 27 and May 11, over 500 employees and family members from Starbucks, Harrah's and Harvey's, Harley Davidson Financial Services, Southwest Gas, GE and the local community explored the area's wetlands, meadows, forest and riparian areas with TNC staff, learned about the critical role that these natural communities play in filtering non-point source pollutants, reducing erosion and providing important habitat for aquatic, avian and terrestrial species. Clear Creek Ranch provided the venue and use of their facilities and the corporations provided all of the food and drink for the events as well as subsidized shuttle vans, portapotties and trash collection/recycling. Many participants also chose to engage in a servicing learning opportunity helping CVTA and TNC volunteers construct a hiking and biking trial designed to provide public access to the community while protecting sensitive habitat.

Collaborated with partners including Assemblyman Kelly Kite, to plan and facilitate the **11th annual Eagles & Agriculture** event, February 23, 24 and 25, 2013. The event is designed to illustrate the important role that working landscapes play in the conservation of wildlife habitat. Over 400 participants toured the WHIC/River Fork Ranch during the course of the three day event where they were provided information on freshwater ecosystems, non-point source pollution and invasive species.

Participated in Carson River Coalition Education Working Group meetings to plan **the Carson River Watershed Environmental Education Roundtable** scheduled February 6. Collaborated with others to plan and facilitate the CRC Environmental Education Roundtable: Developing Effective Program Measures event at the Old Assembly Chambers at the State Capitol.

Presented lesson on natural freshwater communities to 30 members of the Douglas High School Environmental Club on November 20.

Participated with Sierra Nevada Journeys and River Wranglers in an **NDEP led Project WET facilitators training** in Carson City on November 9.

Collaborated with NDEP and other stakeholders on a tour for **US EPA officials** of NPS Program sites in the Carson River watershed on November 8.

Collaborated with NDEP, Sierra Nevada Journeys and Gardnerville Elementary School to bring twenty-one fourth grade and twenty-six sixth grade students to two water quality monitoring sites at River Fork Ranch on October 19, 2012 for **Carson River Snapshot Day**.

Collaborated with River Wranglers and Douglas High School to bring 30 FFA students to River Fork Ranch for orientation in the critical role of natural freshwater communities. The **DHS students** then applied their

nature interpretation skills and water quality monitoring techniques serving **as mentors** to elementary students on the field trips. Several dozen fourth grade students from Gardnerville, Meneley and Scarselli elementary schools came to River Fork Ranch on October 15, 16 and 17 respectively for **Carson River Work Days** where they participated in service learning opportunities and rotated through a variety of educational activities that explored the preserve's wetlands, meadows and riparian areas.

Collaborated with the Sustainable Living and Renewable Energy Roundup Committee and other partners to plan for and participate in the **6th annual Green Living Festival** held at Lampe Park on September 15. Several hundred attendees were offered information on the critical role that natural freshwater communities play in filtering non-point source pollutants, reducing erosion and providing important habitat for aquatic, avian and terrestrial species. TNC volunteers also staffed the Children's Discovery Center where younger visitors participated in craft and other related activities.

Collaborated with the **Carson Valley Photography Club** to host a nature photography show entitled "The Carson River Watershed" at River Fork Ranch on September 24-30. Participants viewed and judged high quality amateur photographs of natural scenes from throughout the watershed, were offered information on conservation easements, freshwater ecosystems, non-point source pollution and invasive species in the Carson watershed and walking tours of existing riparian, meadow and wetland habitat as well as areas undergoing active habitat restoration along the Brockliss Slough and West Fork of the Carson River.

Collaborated with Sierra Nevada Journeys and River Wranglers to plan and present a **Project WET teacher training** workshop at River Fork Ranch on September 22, 2012. The workshop included demonstrations of water quality monitoring techniques as well as lessons and activities for the teachers use in their classrooms.

Collaborated with the **DCSD's Summer Reading Camp** Program to bring 85 elementary school students to River Fork Ranch on August 8 and 9, 2012 where they participated in a "nature treasure hunt" that explored the preserve's wetlands, meadows and riparian areas.

Collaborated with **East Fork Fire & Paramedic Districts** to plan and facilitate a Compost Your Combustibles program designed to reduce the risk of wild fire as well as educate the community on the threat to water quality and the health of freshwater systems posed by catastrophic fire. The program commenced June 23 and ran through August 1, 2012. A second program commenced October 15 and ran through December 15, 2012.

Collaborated with **Birding Under Nevada Skies** to plan and facilitate native bird workshops at the WHIC July 11 14 limited mobility and wheelchair bound residents from the Sierra Place Senior Living Facility. July 18 15 limited mobility and wheelchair bound residents from the Lodge Senior Living Facility. Sept 5 12 limited mobility and wheelchair bound residents from the Carson Valley Senior Living Facility. Attendees were introduced to the critical role played by wildlife habitat in the form of healthy wetlands and riparian vegetation in filtering non-point source pollutants and reducing erosion.

Present a program for 15 **high school agriculture teachers** from around NV on July 26, 2012 at the Whit Hall Interpretive Center. Participants were given an orientation to freshwater ecosystems and non-point

source pollution impact, prevention and mitigation.

Collaborated with partners to plan and facilitate **Wings & Willows Festival** 2012 at the WHIC/River Fork Ranch on July 13, 2012. The day was attended by approximately 85 k-8 grade level students from Parks & Recreation summer programs and Boys & Girls Clubs throughout the watershed that rotated through various educational stations.

Load reductions/outcomes/or ongoing

Contract amended to extend expiration and completion of Tasks to 6/30/2014.

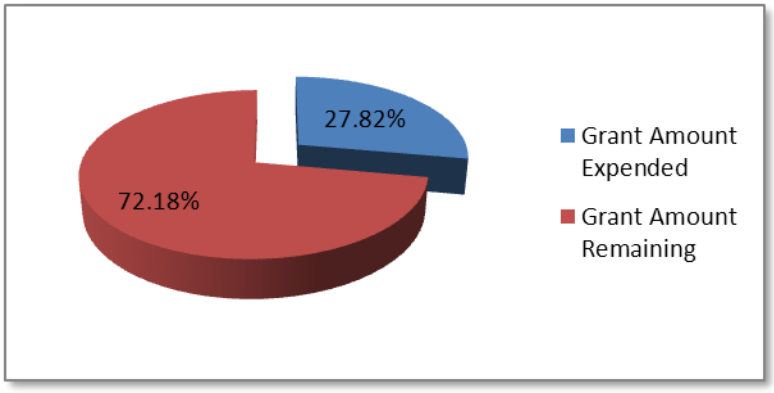
Project title and Contractor: Ash Canyon Road Erosion Control Project
DEP S# 13-019 Carson City Parks & Recreation

Primary Contact: Juan Guzman jguzman@carson.org (775) 283-7342

Project Location: Carson City, 8-Digit USGS HUC: Upper Carson 16050201

Project Summary: 319(h) funds awarded $10,000.00
Total amount of non-federal match funds $11,000.00
Total Project Cost $21,000.00

Total Grant Reimbursements through June 30, 2013: $2,781.75



Start and Completion Dates 3/29/13 – 06/30/14

Fiscal Summary: 319(h) funds awarded $10,000.00
Total amount of non-federal match funds $11,000.00
Total Project Cost $21,000.00

Project Partners:
Carson Water Subconservancy US Forest Service

Background Ash Canyon Creek is a primary source of domestic water supply for Carson City and has a diversion structure and USGS gauging station located at the mouth of the canyon. These structures are subject to sedimentation and damage as a result of stormwater debris. Further, sediment from the canyon comes into the City stormwater system and clogs the pipes. The watershed has steep gradients and bare soil (RCI, 2007).

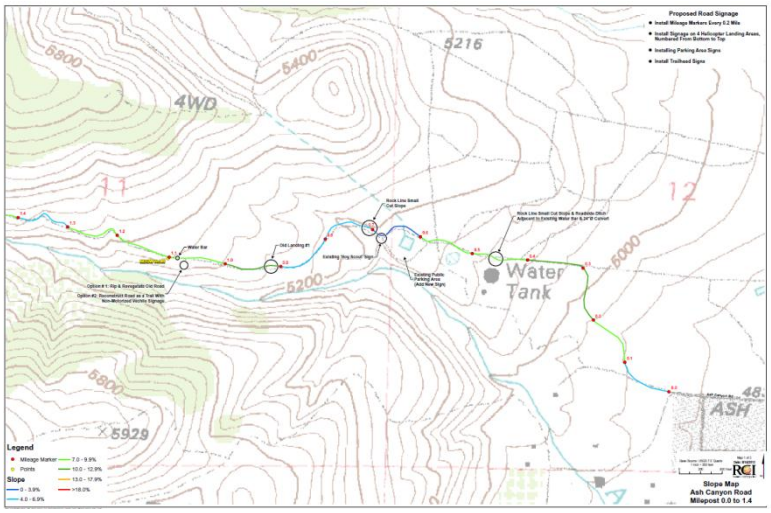
Ash Canyon Road is open for use by the public. Carson City maintains the travelway annually, but areas adjacent to the road are in need of some repair and reinforcement beyond the City's annual maintenance. The City needs to prepare a road erosion control plan so that the travelway may be managed, maintained, and monitored in a consistent and efficient manner. Public users of the road need to be educated through signage regarding the hazards, vehicle high clearance requirements, and seasonal closures. Improved public education will also reduce public use impacts to water quality of Ash Canyon Creek. Ash Canyon Road is the only public access into the crest of the Sierras between Spooner Summit and Mount Rose.

Project Description, Goals and Objectives

The City will prepare an Ash Canyon Road Erosion Control Plan and implement the plan with the 319 grant funds.

This project will reduce erosion from the Ash Canyon Road and thus sediment in Ash Canyon Creek, a municipal water source for Carson City.

Install the following per the Carson City Ash Canyon Road Erosion Control Plan: rolling dip reinforcement; drainage structure repair and replacement; road closure and restoration; signage for public education/cooperation; monitoring for success.



The project area includes Ash Canyon road and adjacent areas from the urban interface on the east to the west end of the Carson City

Progress in SFY 13

In May 2013, a joint field site assessment was conducted to assess alternatives and solutions for various erosion and sedimentation issues. Following the assessment, a working map was prepared showing landmarks, the mile markers and various proposed improvements.

In June, 2013, contractees and subcontractor drove the length of the project area with NDEP staff to familiarize all parties with the area and to receive feedback on the proposed water quality improvement measures. The weeks of June 10th and 17th, the contractor made a variety of erosion and sediment control improvements to the Ash Canyon Road as follows:

1. 4 boulders at NDOW road closer, remove tree from creek and place at Closed Road #1, 3 boulders at Closed Road #2 with water bar and two parking spaces, relocate Boy Scouts sign and widen area for parking at approximate mile 1.75.
2. Road maintenance as directed from mile 1.7 to mile 2.5 including removing berms, removing berms of eroded soil, and reinforce approximately 20 water bars.
3. Road maintenance as directed from mile 2.5 to Landing #4 including removing berms, removing berms of eroded soil, and reinforce approximately 10 water bars.
4. Road maintenance from tanks to mile 1.7 including removing a couple of berms and only minimal grading consisting of removing loose rocks.
5. Road maintenance from Landing #4 to mile 5 including trimming brush and only minimal grading consisting of removing loose rocks.

The long-term road management plan including specific erosion and sediment control improvements remains to be drafted.

Project title and Contractor: Low Impact Design Vegetated Swale, DEP S 11-022
Fallon Paiute-Shoshone Tribe

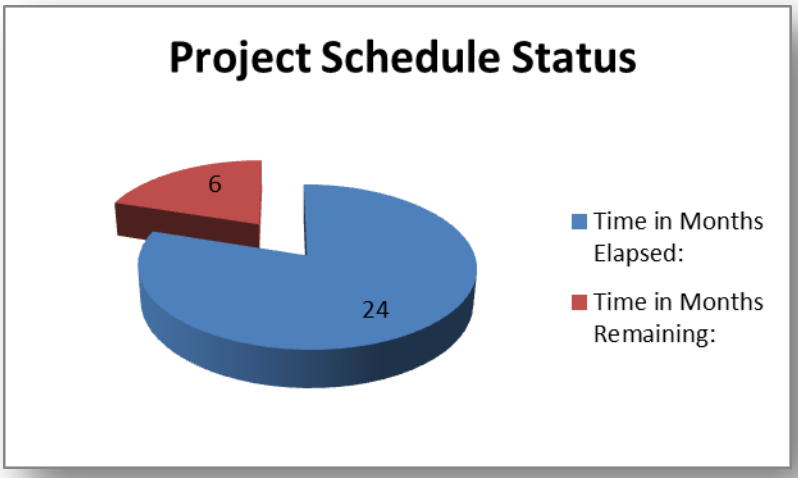
Primary Contact:
Carmen Gonzales
Environmental Department
Fallon Paiute-Shoshone Tribe
1011 Rio Vista Drive
Fallon, NV 89406
775-423-0590

Project Location:
Carson River Basin
Lower Carson River
Churchill County
8-Digit USGS HUC: Lower Carson 16050203

Project Summary:
The objective of this project is to install a vegetated swale system in a Tribal housing subdivision that will capture storm water runoff from roads and home sites and allow the water to infiltrate back into the ground, reducing the amount of storm water runoff that enters nearby waterbodies.

The installation of the swale system will be implemented by a staff of volunteers who are interested in developing hands-on skill with permaculture design projects that improve water quality as well as by local volunteers who are interested in implementing nonpoint source control best management practices on their own properties.

Start and Completion Dates:
July 1, 2011 – December 31, 2013

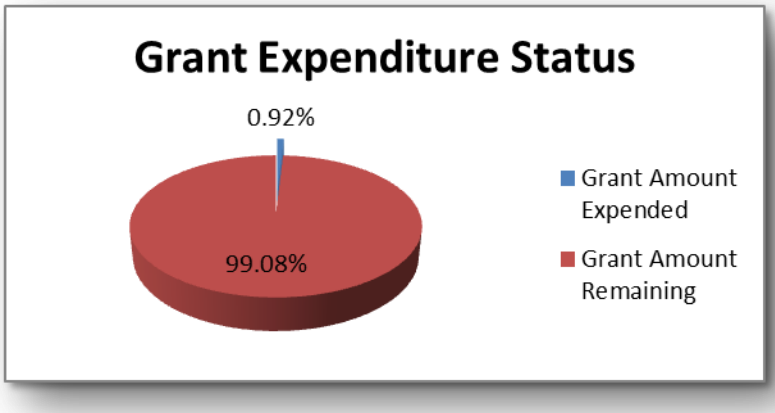


Fiscal Summary:

319(h) funds awarded	$55,000.00
Total amount of non-federal match funds	$55,000.00
Total Project Cost	$110,000.00

Total Grant Reimbursements through June 30, 2013:

$508.05



Project Partners:
None

Photograph(s):

To mitigate flooding and discharge of stormwater, vegetated swales (Rain Gardens) are proposed to be constructed within the road rights-of-way in a tribal subdivision east of Fallon, NV. Absent these rain gardens, runoff discharges to a nearby agricultural canal which is tributary to the Carson River. The drop inlet in this photo is non-functional.

The objective of this project is to install a vegetated swale system in a Tribal housing subdivision that will capture storm water runoff from roads and home sites and allow the water to infiltrate back into the ground, reducing the amount of storm water runoff that enters nearby waterbodies. The FPST Environmental Department monitors ambient water quality on Tribal lands. Water quality on Tribal lands is heavily impacted by nonpoint sources of pollution such as storm water runoff. The implementation of this project would allow the Tribe to gain the tools necessary to work toward improving water quality on Tribal lands.

Stormwater runoff from roads and homes that accumulates to form flooded areas after a rain storm event is a major problem in Tribal subdivisions. The location of the proposed project is at the lowest elevation of a 51-home Tribal Subdivision. The drainage structures constructed for the subdivision were designed to convey runoff to an adjacent field. The subdivision is about 300 yards from a canal that supplies water to agriculture fields and tribal wetlands. The proximity of the subdivision to the canal increases the risk of pollutants entering Tribal water ways.

Project Description, Goals and Objectives:

Goals: Install a vegetated swale system designed to capture stormwater runoff from a Tribal subdivision to allow the collected water to percolate into the ground reducing the amount of nonpoint source pollution that enters Tribal water ways. The vegetated swale system will be designed using the permaculture principals of sustainability that take advantage of the relationships between the water, soil, plants, animals, and people in order to create a system that is effective at improving water quality. Vegetation will be selected for the swale that will optimize the relationships of plant functions in order to create a plant environment that is best suited to the soil and climate conditions while ensuring the long term stability of the swale.

Progress in SFY 13:

Work to date has largely been expended on project design, including a hydrologic assessment of the project area, design of individual rain gardens within the several distinct catchments delineated in the subdivision, and selection of plant material to be used in the rain gardens. Two public outreach efforts have occurred that aim to educate subdivision property owners about the project, and to obtain project support.

Plant material and irrigation supplies have been selected for purchase to facilitate the construction of a demonstration vegetated swale. The training of volunteer laborers will include the construction of this swale. Upon completion of this demonstration swale, volunteers will then proceed to construct additional swales within the subdivision.

Project final design is scheduled for completion at the end of August, 2013, and project ground work is expected to commence immediately thereafter.

Load reductions/outcomes/or ongoing:

Just emerging from the design phase, no load reductions have been realized from this project.

Project title and Contractor: **Protecting Flow Paths to the Carson River DEP 12-014**
Carson Valley Conservation District (CVCD)

Primary Contact: Paul Pugsley (775)782-3661 x112

Project Location: Upper Carson River in Douglas County and Carson City

Project Summary: The grant will address selected unstable ditches, drainages or tributaries flowinginto the Carson River by implementing erosion control and best management practices.

Start and Completion Dates: 1/19/12 – 12/31/13

Fiscal Summary:

Grant Amount	$100,000
Expended to date	$47,729.83

Project Partners: **$288,333 in** Match has been provided by the Nevada Department of Transportation for erosion control work in the Clear Creek Watershed (tributary to the Carson River).

Background

Tributaries, irrigation returns and other drainage flow paths are introducing excess sediment to the Carson River due to erosion. The degree of erosion is highly dependent upon local soil conditions and the channel gradient. In addition, the incised channel bed of the Carson River is often at a lower elevation than a tributary, which causes a headcut to move up the tributary channel resulting in increased erosion. This grant will address identified unstable drainages in the Clear Creek Watershed, Carson Valley and Carson City by implementing erosion control and related best management practices (BMPs). Stormwater runoff controls that are not required by existing NPDES MS4 permits will also be considered.

Project Description, Goals and Objectives

The contract tasks are listed below:

1. Continue to work with NDOT to install best practices on unstable channels in the Clear Creek Watershed. Channels have been previously identified by the 2003 PBS&J Clear Creek Erosion Assessment Report and priorities are set by NDOT based on its plans to install additional controls along Hwy 50. Primary method is installation of a rock lined channel from the source of clean water to the discharge into the Creek. Previous successful installations in the Watershed have utilized rock lined channels composed of 12-18 inches of gravel and 6-12 inches of rock rip rap. Size of the material has been driven by the highly erosive decomposed granite soils, gradient of the channel and flows expected in the channel.

2. Construct approximately 50 feet of a rock lined channel from the Hutt irrigation box to the East Fork of the Carson River located upstream of Genoa Lane in Carson Valley. The discharge point to the East Fork is on the outside of an approximate 120 degree bend in the river and the river bank may require additional protection to stabilize the outfall from the Hutt irrigation return. It is anticipated that the project will require two phases; a) rip rap the irrigation ditch to the high water mark of the river (does not require an ACOE permit) and b) stabilize the outfall to the East Fork of the Carson River and protect the river bank as necessary (requires an ACOE permit).

3. Develop field sheets to clearly document BMP inspections and erosion assessments.

4. Identify all significant tributaries, irrigation returns and other drainage flow paths to the Carson River in Carson Valley and Carson City. Generate an erosion assessment for each discharge point and catalog in a binder in the District office for future reference. Upstream and downstream photos of each discharge point should be included in assessment.

Progress in SFY 13:

Activity highlights

1. **Completed Hutt Ditch Stabilization Project.** An old CMP was removed (one less obstruction in ditch), new box culvert installed next to diversion structure and channel bottom was rock lined to mitigate erosion and sediment discharge into river. Ground cover is establishing and a new fence was installed to exclude cattle from ditch and river outfall to allow revegetation.

2. **Conducted field surveys and mapped:**
   a. Outfalls receiving runoff from Hwy 395 in Gardnerville downstream of Fish Hatchery
   b. Outfalls discharging into Martin Slough, Cottonwood Slough and Heybourne Ditch which are tributary to the Carson River
   c. There are approximately 3 outfalls discharging to the River in Carson City
   d. There are approximately 6 defined outfalls to the River in Douglas County. Final analysis will be conducted 4th Q 2013.

3. **Completed work on 11 drainages** within the Clear Creek Watershed in cooperation with NDOT since start of contract. Activities included general maintenance of existing structures, channel stabilization, sediment basin modifications and culvert upgrades or replacements. These activities are considered match to the contract.

Load reductions/outcomes/or ongoing: Load Reductions will be included in Final Report.

Project title and Contractor: **Investigating Feasibility of Residential BMP Program DEP 12-014**
Carson Water Subconservancy District (CWSD)

Primary Contact: Brenda Hunt (775)887-9005

Project Location: Carson River Watershed

Project Summary: Research will be conducted to find a successful outreach model for implementing a residential BMP implementation program.

Start and Completion Dates: 1/20/12 – 03/31/13 (*extended to 12/31/13*)

Fiscal Summary:

Grant Amount	$7,900
Expended to date	$4,991

Project Partners: No Match required. This amount was rolled over from what was remaining after DEP 09-024 was completed.

Background

CWSD partnered with NDEP, Carson City, University of Nevada Cooperative Extension, and North Tahoe Conservation District on a two year project in Carson City that focused on the implementation of residential best management practices (BMPs) for erosion control and infiltration of run-off called the Carson Clearwater Revival. During the course of the program, two residential properties in Carson City's upper watershed won a contest and were provided cash and other project incentives to implement BMPs on their properties. Although these residences successfully implemented residential BMPs, the project's extensive outreach efforts, which included targeted residential workshops, newspaper articles, and even knocking on neighborhood doors to explain the project, did not produce many contest applications, nor an informed citizenry. An additional issue with the project was that the BMP's that were implemented were not low cost enough to be readily used by average homeowners.

Project Description, Goals and Objectives

Small residential landowners play an important role in protecting the water quality of the Carson River by infiltrating or absorbing stormwater or sprinkler water on their properties; therefore eliminating the chance for that water to enter stormwater drains and reach the River. There are a number of different types of best management practices (BMPs) for erosion control and infiltration of run-off available to assist homeowners in achieving run-off infiltration. Project goals and objectives include

1. Determining an effective education and outreach method that can be modeled and adapted to the Carson River Watershed.
2. Outlining a suite of low cost, effective, easily implemented BMPs that suit small scale residential lots.
3. Applying the knowledge gained through this project on a watershed-wide basis in the future when

additional funding becomes available.

4. Providing the information gained to other entities or communities within Nevada that are trying to implement similar BMP programs.

Progress in SFY 13:

Activity highlights

a. Continued research into programs from other states that have established a homeowners BMP education program to identify the most effective models.
b. Refining list of simple, low cost BMPs homeowners can implement.
c. Investigating use of online tools to assist homeowners in choosing best BMPs for their property:
    - Native plant selectors
    - Benefit calculator to evaluate water/cost savings of different BMPs

Load reductions/outcomes/or ongoing: Planning project, Load Reductions not applicable.

Project title and Contractor: **Clear Creek NPS Awareness, Education and Management**
Carson Water Subconservancy District (CWSD)

Primary Contact: Brenda Hunt (775)887-9005

Project Location: Tributary Watershed to Carson River in Douglas County and Carson City

Project Summary: The goal of this grant is to inform and educate local stakeholders and property owners throughout the Clear Creek watershed about non-point source (NPS) pollution.

Start and Completion Dates: 2/15/11 – 12/31/13

Fiscal Summary:

Grant Amount	$40,965
Expended to date	$24,173

Project Partners: Match for this grant has been provided by CWSD, Carson City, local property owners and Nevada Department of Transportation.

Background

Clear Creek flows into the Carson River at the south end of Carson City and is currently impaired for zinc and E. coli from the gaging station in the Canyon to the River. There is concern among the stakeholders that continued urbanization will further degrade Clear Creek above and below Highway 395, resulting in increased non-point source (NPS) pollution to the Carson River.

Project Description, Goals and Objectives

The primary goal of the Clear Creek Watershed Council is to educate stakeholders about reducing impacts of NPS pollution to Clear Creek and ultimately the Carson River. Outreach priorities include the impacts of stormwater runoff and BMP education for property owners. To achieve this, CWSD will retain a part-time Coordinator (approximately 30 hours per month) who will organize educational activities and when needed, facilitate coordination of conservation or erosion control projects implemented by other agencies or organizations.

Progress in SFY 13:

Coordinator Activity highlights

1. Contributed quarterly articles/information to the CRC newsletter "The Flow"
2. Organized and facilitated 3 Watershed Council meetings
3. Organized Potluck/Barbecue for the Watershed Community. Educational booths provided by the Clear Creek Watershed Council, NDEP Project Wet and Costco Green Living
4. Participated in Carson River Snapshot Day by assisting students with collection of water quality

samples from Clear Creek. (Photos below)

5. Working with Carson City Parks and Recreation to develop educational signage for Bailey's Fish Pond and Wetland in Fuji Park. Pond is fed with water diverted from Clear Creek.

Load reductions/outcomes/or ongoing: Ongoing educational program, Load Reductions not applicable

Photos of students during SnapShot Day

Project title and Contractor: Carson River Coalition (CRC) Watershed Coordinator DEP 12-012
Carson Water Subconservancy District (CWSD)

Primary Contact: Brenda Hunt (775)887-9005

Project Location: Watershed Wide

Project Summary: **The CRC Watershed Coordinator has 5 primary responsibilities:**

1. Implementing the Carson River Adaptive Stewardship Plan
2. Establishing and maintaining the lines of communication between the numerous stakeholder groups
3. Organizing and facilitating the activities of the CRC and its working groups
4. Implementing public outreach and nonpoint source pollution awareness programs
5. Working with the various stakeholder groups to secure and administer funding for projects

Start and Completion Dates: 6/28/12 – 6/30/15

Fiscal Summary:

Grant Amount	$110,672
Expended	$35,492

Project Partners: CWSD coordinates with all stakeholders within the watershed and provides the entire amount of match for this grant.

Background

The Carson River Watershed (Watershed) has been named as a Priority Watershed under the Nevada Nonpoint Source Management Plan (NPS Plan) by the Nevada Division of Environmental Protection (NDEP). The goals of the NPS Plan include the coordination of water quality protection activities with, Federal, State, local agencies and Tribes, and the implementation of educational activities for Nevadans about water quality protection as related to nonpoint sources (NPS). These goals are consistent with the goals of the integrated watershed planning process (IWPP) being led by the Carson Water Subconservancy District (CWSD). Implementation of integrated planning efforts and the use of strong partnerships between the public and private sectors are important tools in effective watershed planning and management. Through cooperative processes projects aimed at reducing, controlling and preventing NPS pollution, and thereby improving water quality, will be coordinated in a more effective manner. Implementation of this principle would be the primary focus of the Carson River Coalition Coordinator (Coordinator) position.

Project Description, Goals and Objectives

The primary goal of the Coordinator position is to provide a means to oversee and coordinate the IWPP for the Watershed. Because the bi-state Watershed crosses several political boundaries —Douglas County, Carson City, Storey County, Lyon County, and Churchill County, Nevada, in addition to Alpine County, California —the Coordinator will provide liaison with conservation and political entities to ensure that

adequate communication occurs to support the integrated process.

Progress in SFY 13:

Activity highlights (not comprehensive list)

a. Submitted Final Report and Invoice for previous CRC grant DEP S 10-023 on 9/30/12. All funds expended.
b. Organized 14 CRC working group meetings and one main CRC update meeting.
c. Participated in the annual Snapshot Day water quality monitoring event held in October
d. Developed Flood/Floodplain Awareness Displays for the Carson City and Douglas County Libraries
e. Worked with NDOW to prepare brochure about Aquatic Invasive Species – CWSD also provided funding for printing.
f. Began update to Regional Floodplain Management Plan
g. Worked with other stakeholders to prepare symposium presentation for the annual Soil and Water Conservation Society Annual Meeting entitled "A Living River Approach to Floodplain Management"
h. Prepared and submitted grant proposal to the National Fish and Wildlife Foundation for noxious weed signage and education.
i. Helped Organize Environmental Education Roundtable in February
    - Event focused on how to evaluate effectiveness of education programs in changing behavior
    - 49 people attended
j. Developed and sent out 3 issues of the watershed newsletter "The Flow"
k. Helped Organize/Participated in various outreach events for area schools
    - River Wrangler River Workdays
    - Field Trips to Silver Saddle Ranch in Carson City and the River Fork Ranch in Carson Valley
l. Organized "Get on the Bus" watershed tour held in June
    - 35 people participated
m. Participated in NEMO meetings and activities.
n. Watershed Coordinator regularly attends and gives watershed updates at CWSD Board and County Commission meetings.
o. Hired part time Watershed Assistant to help with reporting and implementation of education programs.

Load reductions/outcomes/or ongoing: Ongoing

Project title and Contractor: **Middle Carson River Restoration** DEP S 12-013
Dayton Valley Conservation District (DVCD)

Primary Contact: Rich Wilkinson (775)246-1999

Project Location: Middle Carson River in Lyon County

Project Summary: This project will revegetate and stabilize approximately 2700 linear feet of riverbank Rock stream barbs and bioengineering techniques (e.g. willow bundles or wattles) will be utilized to trap sediment, encourage native plant recruitment and improve water quality.

Start and Completion Dates: 5/18/12 – 12/31/13

Fiscal Summary: Grant Amount $150,000

Project Partners: Carson Water Subconservancy District**,** Landowners

Background: The Carson River through Dayton Valley, Nevada, is currently unstable due to a variety of factors. Historic channel straightening, lowering of streambed elevations, highly erodible streambanks, rapid urbanization and loss of floodplain storage capacity have contributed to impaired water quality and loss of riparian function. The streambanks will be protected using a series of rock and bioengineering treatments in order to deflect the highest velocity away from the banks. Bioengineering encourages the deposition of fine material, which is critical in the establishment of vegetation, seedling recruitment and the re-establishment of a riparian buffer. This area is also infested with the noxious weed, Perennial Pepperweed (Lepidium latifolium), which has made the area inhospitable to native species, has increased erosion potential and overall instability of the riparian zone. *Bank stabilization through Dayton Valley is particularly important due to the mercury contamination in the sediment as a result of the gold and silver ore processing conducted along the river during the Comstock Era.*

Project Description, Goals and Objectives

Primary goals include:

- Revegetating and stabilizing riverbanks located at **5** different project sites(not contiguous) which total approximately **2700** linear feet
- Reducing erosion and improving water quality in the long term
- Reducing and controlling spread of noxious weeds, particularly perennial Pepperweed

Progress in SFY 13: Banks stabilized at 5 project sites ahead of grant expiration date.

Load reductions/outcomes/or ongoing:

R5 Model Estimate* for approximate bank length total of 2700 feet with average bank height of 17 feet	BMP Efficiency* Bank #1	Bank #1
Sediment Load Reduction (ton/year)	1.0	4590.0
Phosphorus Load Reduction (lb/year)		4681.8
Nitrogen Load Reduction (lb/year)		5072.0

***Note: assuming 2 feet/year lateral recession rate and fine sandy loam soils**

Project title and Contractor: **Carson River Watershed Environmental Education Program**
DEP CC# S12-022

Carson Water Subconservancy District

Primary Contact: Brenda Hunt, Watershed Coordinator; (775) 887-9005, brenda@cwsd.org

Project Location:
Douglas County, Carson City, Lyon County, Storey County, Churchill County
8-Digit USGS HUCs: Upper Carson 16050201, Middle Carson 16050202, and Lower Carson 16050203

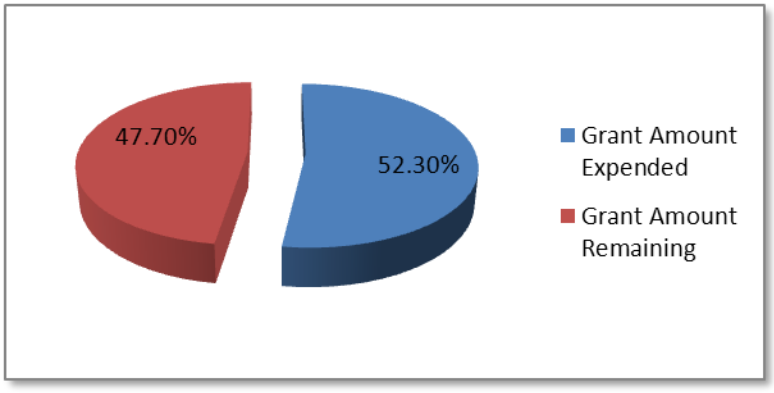
Project Summary: The Watershed Environmental Education (EE) Program provides engaging watershed education activities to students, educators, and families that show participants how their actions directly impact their local watershed. This exemplary Program strives to inspire participants to learn about their local watersheds, and to empower them to take care of their water sources. This EE Program provides a distribution and communication pathway which distributes NPS pollution prevention, best management practices, and stormwater management information effectively and efficiently to school district staff, students and families within the watershed community.

The EE Coordinator markets, promotes, and provides watershed–wide environmental education for the Carson River watershed and works closely with the numerous organizations and entities to implement a comprehensive EE program that engages students as well as educators and families. The program offers professional workshops, classroom sessions, and field days to local schools in Douglas, Carson City, Lyon, Storey, and Churchill counties. Conserve Carson River Work Days promote environmental education and restoration projects for water quality improvements. Participation in public fairs engages students as environmental educators to families and community attendees.

Start and Completion Dates: 4/2/12 – 12/31/14

Fiscal Summary: 319(h) funds awarded	$ 97,774.00
Total amount of non-federal match funds	$153,300.00
Total Project Cost	$251,074.00

Total Grant Reimbursements through June 30, 2013: $51,134.28



Project Partners:

Douglas School District
Carson City School District
Lyon County School District
Storey County School District
Churchill School District

NV State Parks
Service clubs (i.e. Lions, Kiwanas)
Ducks Unlimited
Community Chamber of Commerce
County Commissions

The Nature Conservancy
Audobon Society
CRC - Education Working Group
NDEP staff

UNCE
Conservation Districts
Private Property owners
Scout Troups

EE Coordinator instructs students from Logos Christian Academy to conduct water quality monitoring and field assessment at Ft. Churchill. Carson River Snapshot

Background: NDEP identifies the Carson River Watershed (Watershed) as a Category I Watershed. Eighteen reaches of the Carson River are listed on the Nevada 303(d) Impaired Waters List and pollution impacts are attributed to non-point source (NPS) pollution. Providing environment education (EE) is an effective means of raising awareness of and combating NPS pollution. According to a survey conducted by the U.S. EPA (Lisboa, 2001), young children serve as effective messengers to older age groups.

The Carson River Watershed Stewardship Plan (CRWSP) meets the nine required elements of a watershed-based plan for the purposes of this contract. "To promote understanding and awareness of watershed resources and issues through educational efforts throughout the watershed" is one of the guiding principles that the Carson River Coalition Education Working Group strives to implement. This working group serves as the steering committee for the EE Coordinator position.

The CWSD has contracted with Linda Conlin, as the EE Program Coordinator. Linda has been involved with this program for over 15 years and in a separate capacity, she is Director of River Wranglers, an organization dedicated to helping youth and families explore, conserve and celebrate our rivers through community programs, projects, and education. The role of the EE Coordinator is to introduce, promote, and sustain environmental education programs that focus on NPS for local schools within the Carson River watershed (Douglas, Carson City, Storey, Lyon and Churchill counties).

Project Description, Goals and Objectives:

Maintain partnerships with local schools and to offer opportunities for increased knowledge and understanding of NPS pollution in the Carson River watershed by:

1 Increasing education about NPS pollution prevention and its effect on water quality

by providing teachers and students the materials and knowledge to integrate EE programs into school curriculums in school districts within the watershed.

2 Facilitating a change in "citizen" behavior by informing participants how their personal habits/lifestyles impact their environment.

3 Conducting workshops, training sessions, and field days for teachers and students in the watershed.

4 Collaborating with the CRC Education Working Group, conservation districts, and others to promote and develop student programs and activities.

5 Working with local schools to complete hands-on activities that support restoration projects on the Carson River.

6 Providing public outreach to increase the general public's knowledge of NPS pollution prevention and management.

7 Educating elected officials throughout the watershed on NPS pollution prevention by providing semi-annual presentations to CWSD Board of Directors.

Progress in SFY 13: Since contract approval, April 2, 2012, the program achievements include, but are not limited to the following:

The EE Program Coordinator chaired and participated in CRC Education Working Group meetings and a series of Visioning Workshops. One of the outcomes from the Visioning Workshops is the EE Roundtable held in February 6th, 2013. Viewing the Carson River Watershed through Environmental Education and Outreach Roundtable helped to identify EE programs within the Carson River Watershed, what gaps exist, who are the target audiences, what are we teaching, how we measure program effectiveness, and we can broaden our effectiveness through collaboration. Future plans include developing a strategic plan and measurable goals for the Education Working Group.

Outreach to school districts and faculty is especially busy during the academic year. This program involves students in Conserve Carson River Work Days. Earth Day events were conducted at Ambrose Park in Carson City by collaborations with the Principal and faculty at Empire Elementary, and the science instructor and students from Carson High School. The program continues its connections with The Nature Conservancy's River Fork Ranch and to involve students from Douglas County School District in service learning opportunities and engaging in a variety of educational activities that explore the preserve's wetlands, meadows and riparian areas.

Conduct trainings, workshops and field days: The program coordinated the Trout in the Classroom fish release at Baily Pond with 5th graders from Fritsch Elementary and Carson Montessori School. Additional activities about the watershed and the water cycle, and weed pulling, were coordinated and offered using facilitators from other agencies. Elementary school students (Hugh Gallegher, West End, Numa, Empire, Minden, to name a few) received demonstrations of the enviroscape model, and presentations of the Carson River history trunk, and engaged in the art and history of fish printing. The program presented watershed activities at the UNCE sponsored Farm Days event at Fuji Park and at Harley Davidson during earth week.

Coordinated work days at Rambling River Ranch, River Fork Ranch, and Deer Run Road. This program

worked with Lahontan CD, Dayton Valley CD, and Carson Valley CD. Included in these work days are presentations and trainings for Churchill County FFA, Carson High, and Douglas County students. CHS students surveyed trees affected by beavers prior to the field trip. The focus was to maintain a healthy riparian zone and protect cottonwoods against damage. Silver State Charter School students wrapped trees, planted large cottonwoods and inventoried weed infestation; at River Fork Ranch students planted trees. More workdays are being planned in Douglas, Lyon and Storey counties that will involve additional schools and students.

Partnership with the Dayton Valley Chamber of Commerce for the Oodles of Noodles Festival continues to engage high school students from Dayton and Silver Stage High Schools with an entire street filled with environmental education activity. The students participated in job shadows in preparation for the event. Students from Dayton High School business club created an educational brochure to promote River Wranglers and this EE program.

Other partnerships and collaboration included Sierra Nevada Journeys, The Nature Conservancy, and NDEP to present a Project WET workshop to teachers in the Carson and Truckee watersheds; the annual Tom Brooks Memorial Kids Fishing Day at Baily Pond in Carson City; and The Nature Conservancy to present a Wings and Willows Festival for Boys and Girls Club members in Silver Springs, Dayton and Carson City. A workshop was presented to participants in the summer reading program at Churchill County Library. Collaboration included work with Nevada State Parks staff to develop a RIVER BINGO that will be used at many events at Ft. Churchill State Park.

Load reductions/outcomes/or ongoing: This Carson River Watershed Environmental Education Program is exemplary in its methods and outcomes. This is an ongoing educational program that has continued to expand its reach and connectivity to communities within the Carson River watershed for nearly 20 years. Recent discussions around developing an Education and Outreach Strategic Plan to provide consistent messaging on a watershed scale are on the horizon. A watershed-wide public survey, integrating existing EPA watershed planning tools, will be developed, implemented, and analyzed. This will provide a baseline indication of our residents' knowledge of watershed issues specifically related to NPS pollution.

Project title and Contractor: Carson River Environmental Education Conservation Tours
DEP CC# S12-026 Carson Water Subconservancy District

Primary Contact: Brenda Hunt, Watershed Coordinator; (775) 887-9005, brenda@cwsd.org

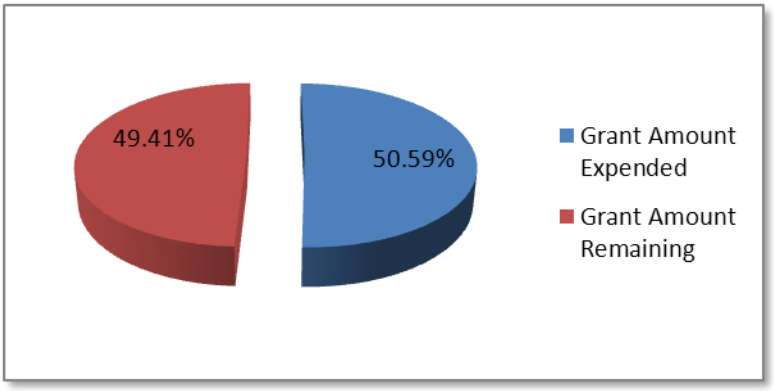
Project Location:
Douglas County, Carson City, Lyon County, Storey County, Churchill County
8-Digit USGS HUCs: Upper Carson 16050201, Middle Carson 16050202, and Lower Carson 16050203

Project Summary: The primary goals of this project are to expand the existing Explore Your Watershed Program to include a variety of EE Conservation Tours. 1. Tours include activities and experiences that advocate pollution prevention, best management practices, and low impact development; 2. Promote EE Conservation Tours for environmental and social clubs, youth, public officials, and community leaders; 3. Promote river clean up days and provide the community opportunities to learn how they can improve the health of the Carson River; 4. Facilitate a change in behavior by providing education about natural resource concerns and how ones' personal habits impact the environment; 5. Reach approximately 300 participants within the contractual timeframe, including on the river rafting/ kayaking tours and streamside learning events when the water is low.

Start and Completion Dates: 5/23/12 – 12/31/14

Fiscal Summary: 319(h) funds awarded $23,653.00
Total amount of non-federal match funds $26,691.00
Total Project Cost $50,344.00

Total Grant Reimbursements through June 30, 2013: $11,966.72



Project Partners: UNCE
US Fish & Wildlife
NV Washoe Tribe
River Wrangler
The Nature Conservancy
Fallon Paiute-Shoshone Tribe

Background: Conservation Tour participants receive an educational experience on the Carson River watershed while hiking, kayaking or rafting the Carson River or targeted areas in the watershed. The CWSD contracts with Pat Fried, proprietor of Great Basin Sports (GBS), to conduct educational watershed conservation tours. GBS works closely with the Carson River Coalition's (CRC) River Recreation Working Group, the Education Working Group, and member organizations/entities to implement an environmental education program that gets participants on and around the Carson River. **Kayak & Rafting:** Participants float in kayaks or rafts with learning stops along the float route to engage and inform participants about watershed issues. **Streamside/Riparian Area Learning:** Participants experience and learn about

watershed issues and the river from the shore. Activities may include litter removal with a focus on NPS pollution and prevention. **Tribal Tours:** GBS also offers tours specifically for leaders and members of the Washoe and the Fallon Paiute Shoshone Tribes.

Project Description, Goals and Objectives:

A primary objective is to reach approximately 300 participants within the contract timeframe and to facilitate behavior change by providing education about natural resource concerns and how ones' personal habits impact the environment. These conservation tours better equip participants to make informed decisions; to support and endorse pollution prevention, best management practices, and low impact development that, in turn; foster sustainable practices among others in our communities & governments and protect the long-term watershed health.

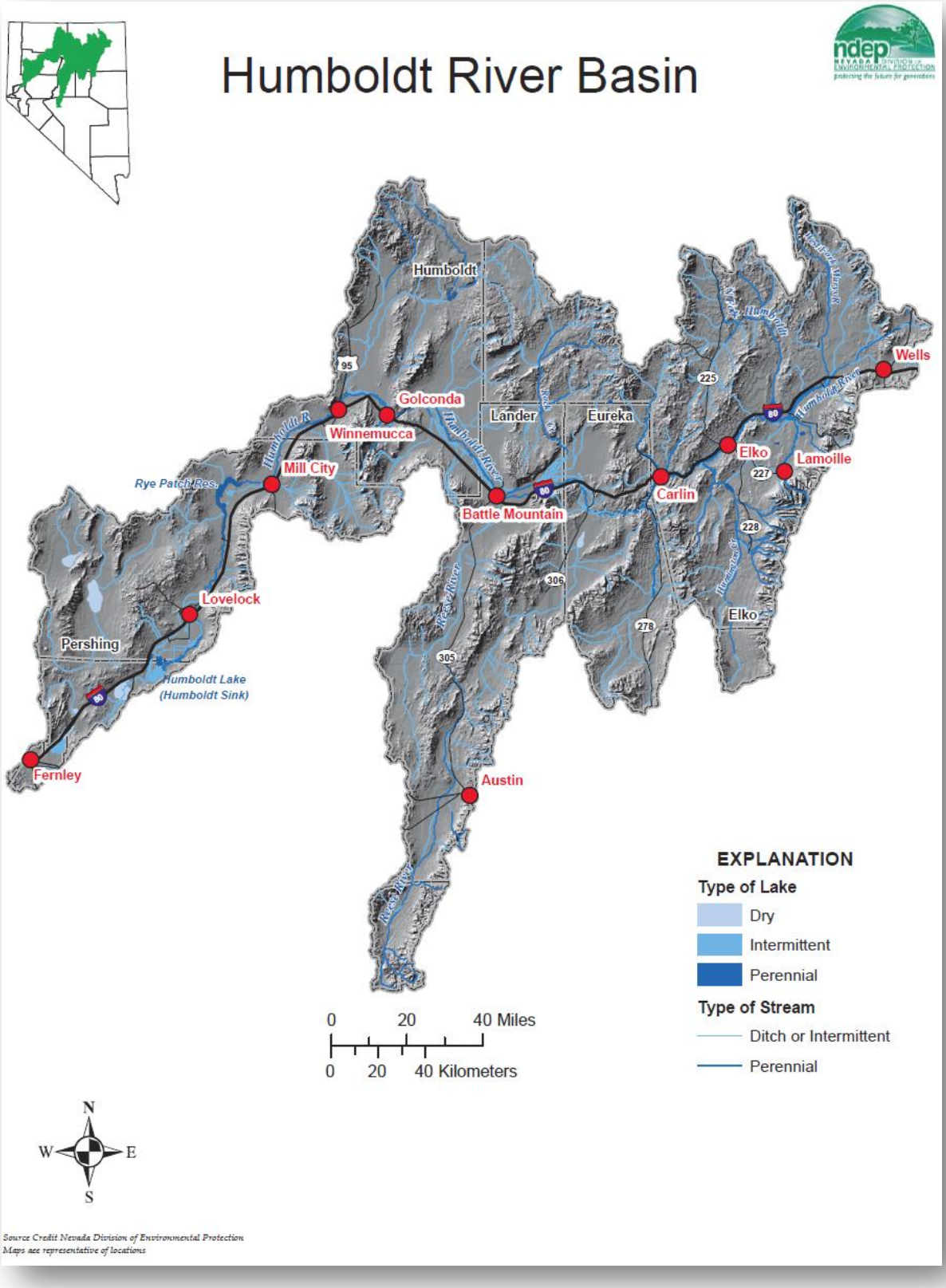
Great Basin Sports posted several fliers at local businesses and colleges and conducted outreach to several environmental groups about the EE Conservation tours program. This program engaged community members in environmental education by providing a hands-on experience; reaching out to underserved minorities, policy-makers and youth to learn about the Carson River; and by providing opportunities to learn about river conditions, restoration practices, and pollution prevention.

Progress in SFY 13: During Q2, 2013, this contract took advantage of spring flows in the river to conduct the following:

DATE	FLOAT	PARTICIPANTS
04/05/13	Willow Run	6
04/07/13	Willow Run	7
04/13/13	Willow Run	8
04/14/13	Willow Run	40
04/20/13	Willow Run	16
04/21/13	Willow Run	12
04/23/13	Willow Run	10
04/27/13	Willow Run	11
04/28/13	Willow Run	12
04/30/13	Eagle Valley	4

DATE	FLOAT	PARTICIPANTS
05/04/13	Eagle Valley	6
05/05/13	Willow Run	5
05/10/11	Eagle Valley	3
5/11/13	Willow Run	14
05/12/13	Willow Run	11
05/13/13	East Fork	4
05/15/13	East Fork	9
05/16/13	Eagle Valley	7
05/17/13	Stillwater	10
05/18/13	Stillwater	40
05/19/13	Stillwater	10

Load reductions/outcomes/or ongoing: Being an educational program no load reductions are anticipated. Tour evaluations, attitudinal outcomes, ActionEducation events, and indicators of behavior change will be stated as they are received.


Humboldt River Basin
Humboldt
Golconda
Winnemucca
Lander
Eureka
Mill City
Rye Patch Res.
Battle Mountain
Carlin
Elko
Lamoille
Wells
Lovelock
Pershing
Humboldt Lake
(Humboldt Sink)
Fernley
Austin
Elko
95
80
225
227
228
306
278
305
EXPLANATION
Type of Lake
Dry
Intermittent
Perennial
Type of Stream
Ditch or Intermittent
Perennial
0 20 40 Miles
0 20 40 Kilometers
N
W
E
S
Source Credit Nevada Division of Environmental Protection
Maps are representative of locations

Humboldt River Watershed

NDEP's NPS Program coordinates extensively with the federal land owners and other state, local and federal stakeholders in the Humboldt River Watershed to implement nonpoint source pollution prevention projects, leverage resources and garner support for watershed projects. To date, we have successfully partnered with the BLM, the US Forest Service, and nonprofit organizations to assist in the implementation of smaller scale NPS projects such as riparian exclosure fencing, improved cattle crossings, pasture rotation and rest, off-site watering, interagency trainings for Proper Function and Condition and monitoring for results. NDEP NPS staff continues to meet with and attempt to partner with all stakeholders in the Humboldt watershed, with increasingly positive results.

Key Watershed Partners

Bureau of Land Management
Humboldt Watershed Cooperative Weed Management Area
Natural Resource Conservation Service
Nevada Division of Forestry
Northeastern Nevada Stewardship Group
US Forest Service
University of Nevada Cooperative Extension
Rural Conservation Districts

Pollution Category, Subcategory, and/or Sources of Pollution Addressed:

Agriculture
Construction
Urban runoff
Hydrologic and Habitat Modification

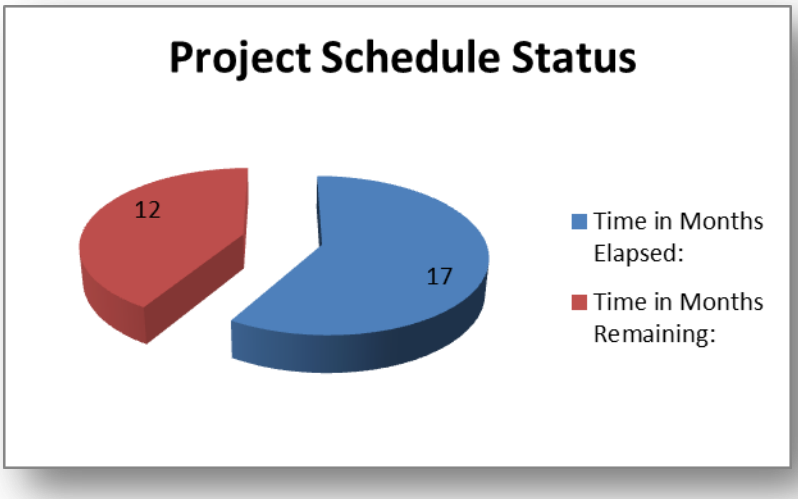
Project title and Contractor: South Fork River Stabilization and Meadow Rehabilitation DEP S 12-017
Nevada Division of Forestry

Primary Contact:
Ryan S. Shane
Resource Management Officer
Nevada Division of Forestry
911 Falcon Lane
Elko, NV 89801
775-738-3454

Project Location:
Humboldt River Basin
South Fork State Recreation Area
USGS Hydrographic Region: Humboldt River Basin
8-Digit USGS HUCs: 16040103 South Fork Humboldt

Project Summary:
The South Fork Reservoir and the South Fork Humboldt River is experiencing increased levels of sedimentation due to rapid erosion of streambanks upstream and downstream of the reservoir. The goal of the project to improve water quality entering and leaving the reservoir which eventually enters the Humboldt River (303d Impaired).

Start and Completion Dates:
February 8, 2012 – June 30, 2014

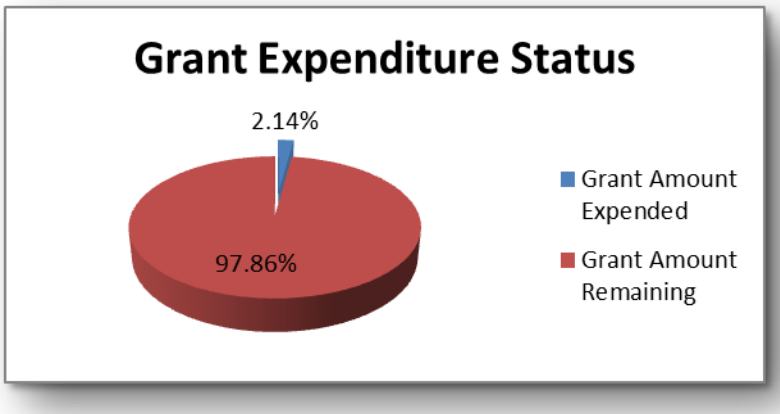


Fiscal Summary:

319(h) funds awarded	$73,763.00
Total amount of non-federal match funds	$78,853.00
Total Project Cost	$152,616.00

Total Grant Reimbursements through June 30, 2013:

$1,579.76



Project Partners:

South Fork State Park, Nevada Division of State Parks
Spring Creek Region – Cooperative Weed Management Area
Nevada Department of Wildlife
Jiggs Conservation District
Northeastern Nevada Stewardship Group

Photograph(s):

North Wildlife Habitat Management Area, downstream of South Fork Reservoir dam. This area has been selected for spot treatment of hoary cress and other invasive weed species, and stream rehabilitation via willow and other riparian species plantings.

Background:

South Fork Reservoir is built upon three historic ranch complexes. In 1983, the Tomeras, who were the last ranchers in what is now South Fork State Recreation Area, sold their property to the State of Nevada. The upper and lower meadows at the South Fork State Recreation Area were previously used as hay and grazing meadows. The park designated the meadow areas a part of Wildlife Habitat Management Areas and have master-planned management objectives and strategies for these areas. The project area includes 553 acres of meadows where a century of irrigation and other agricultural activities ceased without the implementation of rehabilitation efforts. Consequently, soil moisture is no longer high enough to support the existing riparian and meadow species. Several state noxious weeds are dominating most of the upper meadow and spreading to the areas not yet totally infested (NDSP 2007). Weed species are contributing to the erosion of the streambanks and sedimentation of the water in the River. Additionally, a historical comparison shows sinuosity decreased five percent over the last 20 years. These changes may be altering the sub-irrigation potential of the adjacent meadows, and therefore may be contributing to the overall degradation of stream stabilization and water quality.

The project directly addresses water quality parameters in three miles of the South Fork - Humboldt River and the South Fork Reservoir. Indirectly, water quality is addressed in the main stem of the Humboldt River since the South Fork is a tributary to this waterbody. Nonpoint source pollutants impacted by this project are limited to sediment from streambank erosion and overland flows from abandoned farmlands infested with noxious weeds. Indirectly, the project has the ability to impact the iron levels in the main stem of the Humboldt River, which is the parameter that is causing the river to be listed as a 303d impaired waterbody (NDEP 2006).

Project Description, Goals and Objectives:

Methods will include evaluating the functionality of the riparian system and identifying factors contributing to the health and/or degradation of the system including water quality. One known contributor to degradation of water quality is the infestation of noxious weeds (NRS/NAC 555) along streambanks and adjacent meadows. Methods will also include eradicating these weeds and establishing species known to be capable of binding soil particles, thereby stabilizing streambanks and meadow soils under the current hydrological conditions. An education component includes kiosk construction and development of public outreach interpretive panels that address water quality issues specific to the South Fork State Recreation Area including the river and reservoir.

Progress in SFY 13:

Although no grant funds have been expended thus far, this project is moving forward along fronts including expenditures to be used to satisfy cost share requirements. The majority of the public outreach related tasks have been completed, including the construction of two trailhead kiosks including interpretive panels. Baseline project information has been gathered, including the assessment of riparian areas utilizing BLM's Proper Functioning Condition protocol.

Limited herbicide applications have been completed by Nevada Division of State Parks personnel (50 acres above South Fork Reservoir), herbicides have been purchased and donated for use on the project by the Nevada Department of Wildlife, quotes for contracts to remove biomass via goat grazing have been obtained, and streambank stabilization/meadow rehabilitation planning activities have occurred. On

National Public Lands Day (NPLD) in 2012, 1180 linear feet of South Fork Humboldt River streambank was planted with cottonwood trees and willow stakes.

The NPLD Tree and Willow Plantings were monitored in the spring of 2013: Tree survival rate is high. Willows planted near existing beaver dams were used by beaver. Upstream plantings were more successful (70% survival rate).

To facilitate application of herbicides, a flat-bed pickup truck was modified with spray equipment.

Spray rig constructed by the Nevada Division of State Parks with match funds from the Nevada Wildlife Federation.

Load reductions/outcomes/or ongoing:

Load reductions attributed to the above-mentioned bank stabilization assuming an 80 percent efficiency rating for the revegetation treatment are shown below:

Estimated Load Reductions

	BMP Efficiency* Bank #1	BMP Efficiency* Bank #2	Bank #1	Bank #2
Sediment Load Reduction (ton/year)	0.8	0.8	3.5	6.1
Phosphorus Load Reduction (lb/year)			3.0	5.2
Nitrogen Load Reduction (lb/yr)			6.0	10.4

Given that a portion of the streambank treatment was impacted by beaver activity, and that the vegetation has had a short time to become established, the above load reduction estimate is likely over estimated.

Project title and Contractor:

Humboldt Watershed Habitat and Water Quality Improvement Coordinator, DEP S 12-018

Humboldt Watershed Cooperative Weed Management Area

Primary Contact:

Rhonda Heguy
President, Humboldt Watershed CWMA
P.O. Box 570
Elko, NV 89803
775-738-3085

Project Location:

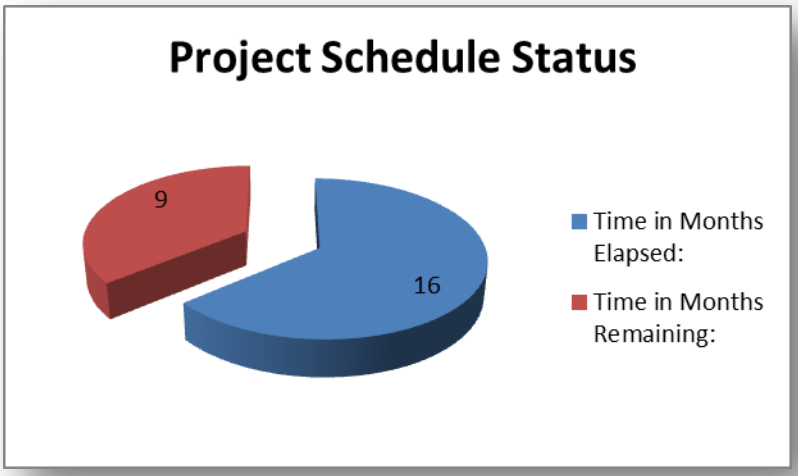
Humboldt River Basin
USGS Hydrographic Region: Humboldt River Basin
8-Digit USGS HUCs: 16040101 Upper Humboldt
16040102 North Fork Humboldt
16040103 South Fork Humboldt

Project Summary:

The proposed Coordinator will be a 30 hour per week position. The Coordinator will bring together current public and private activities to address watershed-wide resource concerns being heavily impacted by invasive weeds and the subsequent impacts to river stability and overall watershed health and productivity.

Start and Completion Dates:

February 14, 2012 – March 31, 2014

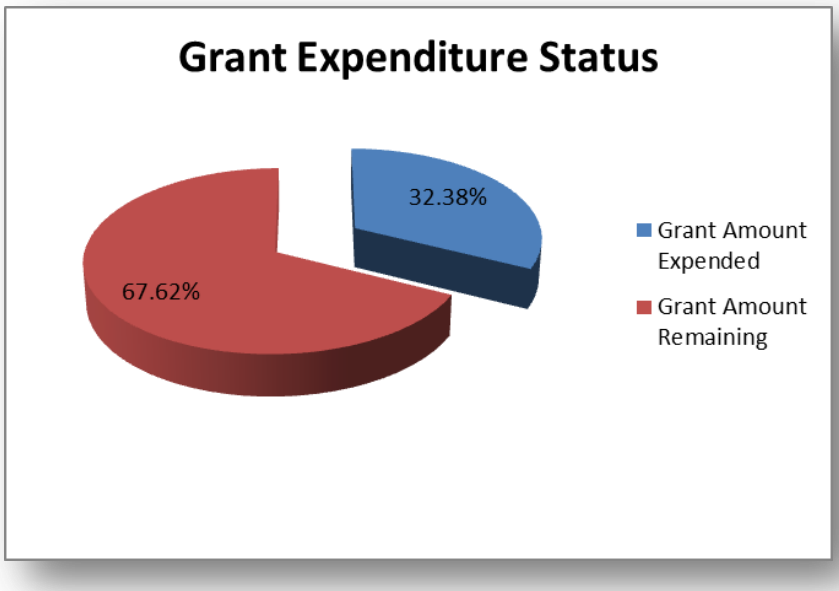


Fiscal Summary:

319(h) funds awarded	$183,333.00
Total amount of non-federal match funds	$183,333.00
Total Project Cost	$366,666.00

Total Grant Reimbursements through June 30, 2013:

$59,357.99



Project Partners:

Bureau of Land Management
Da Ka Doiyobe Resource Conservation and Development
Jiggs Conservation District
Natural Resource Conservation Service
Nevada Department of Agriculture
Nevada Department of Wildlife
Nevada Division of Forestry
Owyhee Conservation District
Society for Range Management, Nevada Section
Union Pacific Railroad
University Cooperative Extension
US Fish and Wildlife Service
US Forest Service

Photograph(s):

Forage left for winter utilization in Squaw Valley, Humboldt River Basin, northwest of Battle Mountain, NV. Previously infested with hoary cress, this rangeland was treated via aerial spraying, burning, and overseeding with desirable grass species.

Background:

The HWCWMA is governed by a Board of Directors made up of landowners, managers and representatives of local, state and federal agencies. HWCWMA was developed to address the invasive weed problem and subsequent decline in water quality within the watershed. The primary function of HWCWMA has been to provide land managers, owners and weed control groups assistance in the areas of funding, agency and weed group coordination and cooperation.

The Humboldt River has historically provided water necessary for growing populations, agriculture, mining and other industries. The watershed, like others within Nevada and throughout the west, has experienced significant changes, both in ecological and physical condition. The benefits of a healthy watershed include productive wildlife habitat and livestock forage, clean and plentiful water for irrigation, a quality recreational experience, stable streambanks, flood control, and water table recharge. Only healthy riparian vegetation and the slow physics of meandering stream channel hold this complex riparian and upland region together.

Weed infestations, mechanical manipulation, and natural flood events have put this vitally productive system at risk. The changes to the basic natural functioning of the river and its tributaries have increased soil loss, mobilized sediments, and increased turbidity and temperature. Invasive weed infestations

degrade water quality, crowd out desired vegetation, cause crop and forage losses, reduce property values, and ruin healthy wildlife habitat and wetlands.

The Humboldt Watershed will only be fully functioning when the invasive weed problem is addressed. Functioning wetlands have certain attributes that must exist so that natural filtering can help maintain healthy water quality standards. Attributes include quality and quantity of riparian and flood zone vegetation to allow runoff / storm events to settle out of the system, the ability to decrease water energy to reduce bed and bank cutting and allow adequate deposition of soil materials. The importance of properly functioning riparian areas to water quality cannot be overemphasized.

Project Description, Goals and Objectives:

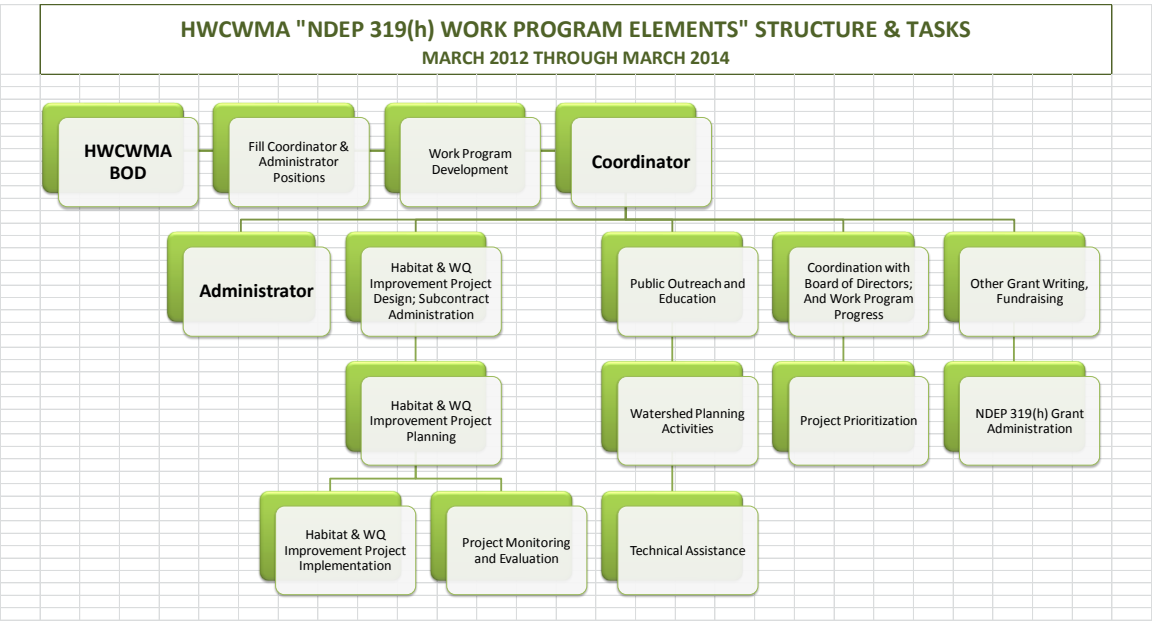
Control of noxious weeds and establishment of perennial riparian vegetation are among the most important tools in protecting the watershed, thereby reducing the non-point source pollutants that are a focus of this grant application. Healthy and abundant wetland plants and soils have the capacity to store and filter a wide range of pollutants and waste. The coordination of ongoing and consistent treatments of noxious weeds within the watershed will require a multi-year commitment which is difficult to maintain with the existing volunteers. A Humboldt River Basin Habitat and Water Quality Improvement Coordinator (Coordinator) would increase the outreach necessary to implement new integrated projects and practices that will improve water quality within the watershed.

Because the Humboldt River is the most under-represented river in Nevada, funding the Coordinator position will be the first step in bringing together a wide array of stakeholders to address a myriad of issues in the watershed. The most easily understood and universal issue is excessive weed infestations. Approaching the issue from a watershed perspective will, by necessity, involve all issues negatively impacting the watershed. The project goal is to find common ground and issues to facilitate positive change. Watershed coordination is not one that can be done by volunteers, and without a position dedicated to this activity, the Humboldt Watershed will remain among the list of impaired waters in the State of Nevada.

The HWCWMA will strive to replicate successful models of watershed coordination efforts in other areas, such as the Carson River. This will be accomplished by meeting with other watershed coordinators to learn about various successes and failures so that a geographically appropriate methodology is developed for this region.

Progress in SFY 13:

Since placement of the Coordinator position, equipment purchases necessary to complete field tasks (Mapping and monitoring for example) have been donated and/or purchased and the previously developed Work Program (that includes coordinator tasks, activities and outputs to be completed) is being implemented. Tasks identified in the 319(h) grant project are structured within the WMA as follows:



Tasks in addition to Work Program Development for which the Coordinator is responsible include the following:

Grant writing and fundraising
Subcontract administration
Watershed planning
Coordination with HWCWMA Board of Directors
Public outreach and education
Technical assistance
Project prioritization
Project implementation

Grants secured or in the process of completion include NDOW Heritage, USFS PILT, UPRR, US Fish and Wildlife Foundation, and Barrick North America. It is recognized that not all other funding sources satisfy the state's cost share requirements (other federal grants). Additional, recent project accomplishments include the following:

Newmont Gold funding application submitted
Pulling Together Initiative Pre-Proposal submitted
Union Pacific Railroad Corridor Weed Mapping initiated
Monthly Northern Nevada Stewardship Meetings now attended
Eight projects selected to receive HWCWMA funding
Educational Brochures are being developed to be printed and distributed
Two Willow Slipping projects commenced on the Humboldt River east of Elko

HWCWMA's noxious weed control efforts have been very successful this far with a total of 7,132 acres treated within the Humboldt River Watershed between 2011 and 2013.

Project Highlight:

This summer, the HWCWMA will work in conjunction with the City of Elko and the Nevada Division of Forestry to remove previously existing noxious weeds at the Frisbee golf course along the Humboldt River. Weeds that are known to live in that area include: perennial pepperweed, Russian knapweed, hoary cress, tamarisk, and Scotch and musk thistles. Because of the current poor condition of the park and the huge domination of noxious weeds, people who use the park are a huge vector in the spread of noxious weeds.

NDF crews were used to remove the manageable infestation of tamarisk as well as mow and weed-whack both the Russian knapweed and perennial pepperweed thatch to reduce biomass. Following mowing, the area will be re-seeded with native grass species which will help to outcompete undesired invasive plants and make the River Park a more enjoyable place to play Frisbee for Elko's residents.

Elko Frisbee Golf Park Noxious Weed Removal Project

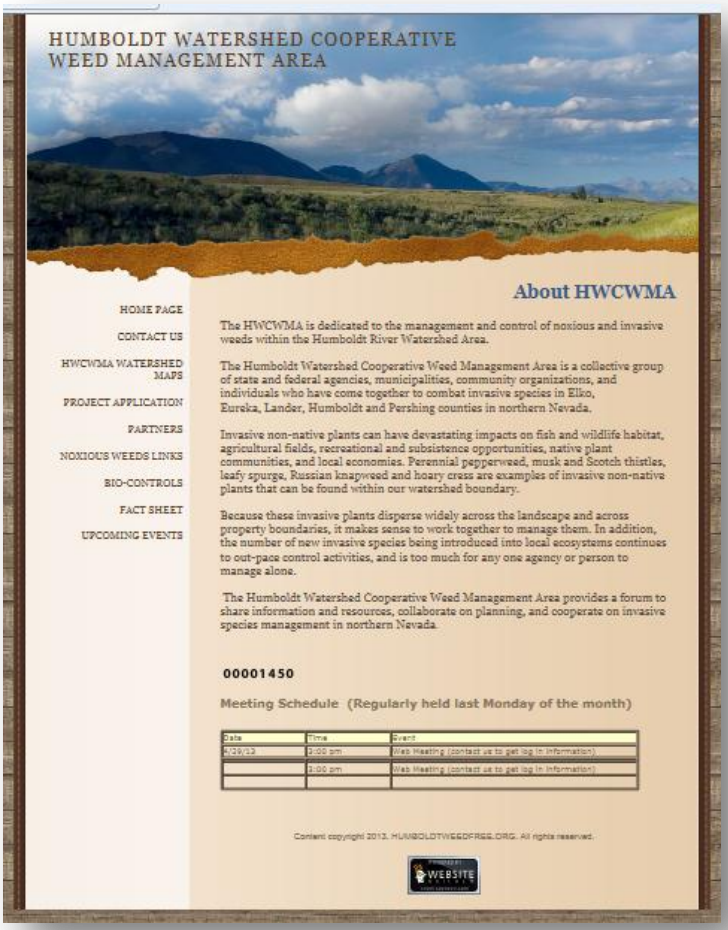
Elko Frisbee Golf Park project site before noxious weed removal.

Project area after noxious weeds were bagged and removed.

As a result of the efforts by the City of Elko and the NDF crews, a total of 74 large bags of noxious weed thatch were collected and hauled to the dump and approximately 300 tamarisk plants were cut and stumps were sprayed with herbicide.

As part of the public outreach effort, the WMA's webpage has been substantially developed, and may be accessed via the following URL:

http://humboldtweedfree.org/



Other public outreach tools include a Quarterly Newsletter, an Organization Brochure, and monthly contributions to the agricultural trade magazine *Progressive Rancher.*

Load reductions/outcomes/or ongoing:

Load reduction numbers are expected to be estimated for specific stream restoration projects as they are completed. Two stream restoration projects have commenced under the Coordinator thus far, however additional projects are in the planning stages.

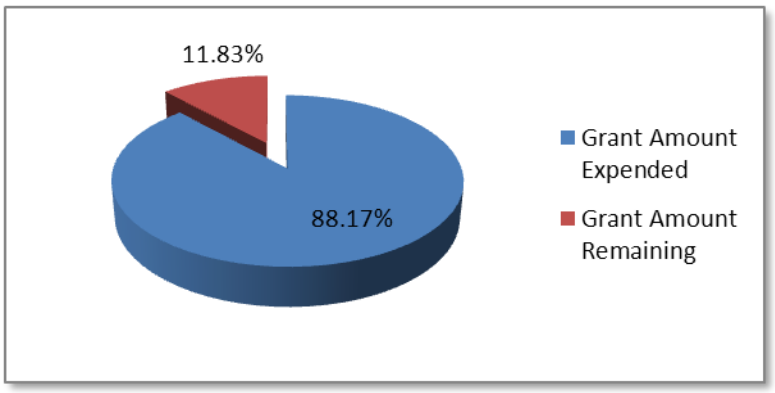
Project title and Contractor: **Rural Nevada Gets W.E.T.**
DEP # 13-022 Nevada Outdoor School

Primary Contact: Andy Hart Andy.Hart@NevadaOutdoorSchool.org (775) 623-5656

Project Location: Humboldt County, Elko County
8-Digit USGS HUC: Lower Humboldt 16040108, Middle Humboldt 16040105, Little Humboldt 16040109, Upper Quinn 16040201

Project Summary: 319(h) funds awarded $11,712.00
Total amount of non-federal match funds $11,859.00
Total Project Cost $23,571.00

Total Grant Reimbursements through June 30, 2013: $10,327.19



Start and Completion Dates 3/12/13 – 06/30/14

Fiscal Summary: 319(h) funds awarded $11,712.00
Total amount of non-federal match funds $11,859.00
Total Project Cost $23,571.00

Project Partners:

Humboldt County School District
Friends of Nevada Wilderness
Elko County School District
USDA Forest Service
Bureau of Land Management

Background Nevada Outdoor School has been helping connect students to the natural world and create life-long learners for the past 10 years. Despite the fact that rural Nevada is a desert, and water should be a sacred thing to all, most children take this resource for granted. The endless availability of clean water from the faucet makes it hard for youth to make important connections between rain, snow, run-off, pollutants, roads, lawns, aquifers and the maligned Humboldt River.

Nevada Outdoor School (NOS) seeks to reach students and educators with educational outreach to better understand their local watershed and non-point source pollution. NOS seeks to teach what a watershed is, how it benefits communities, why clean water is important, how natural and man-made "systems" in a

watershed are connected and how individual choices impact the future health of our water. The program will encourage youth and adult learners in rural Nevada to explore the outdoors and learn about science-based watershed education. With these 319(h) funds, students in rural Nevada will experience their watershed and understand the potential impact of NPS pollution.

Project Description, Goals and Objectives

Nevada Outdoor School endeavors to teach an understanding of the impact of NPS water pollution and to create responsible watershed stewards. An element of the project goals and objectives include ActionEducation™, defined as education that empowers learners to take positive and appropriate action to solve a local water resource issue, to promote watershed stewardship defined as taking steps to make a positive difference.

- 1000 students will participate in classroom science lessons about water, watersheds and NPS pollution.
- 500 students will participate in NOS led field trips to local waterways, with water quality testing, watershed models, run-off demonstrations.
- 10 educators will participate in a Project W.E.T. workshop and share at least one activity with their own students within 90 days. An additional 100 students will be reached with those activities.
- 20 students and 2 educators will be involved in seeding, growing and planting native species to help with the recovery of a burned area adjacent to their school in the small community of Paradise Valley, NV.

Progress in SFY 13

December 2012

- Volunteers collected Kochia seed in Water Canyon to be used for fire rehabilitation in the Paradise Valley area.
- Delivered plant materials and seeds to Paradise Valley School for each student K-8th. Newly planted seeds were transported to and housed at the French Ford Greenhouse through the winter since the Hoop House in Paradise Valley is not complete with temperature controls.
- Construction of hoop house at Paradise Valley.

January 2013

- Project WET workshop planning, recruitment, advertisement, agenda and workshop logistics

February 2013

- February 22nd Project WET Facilitator Training - 3 participants
- February 23rd Project WET Educator Workshop - 8 participants; 4 facilitators

March 2013

- Created Pre and Post Assessments
- Construction of Watershed Models - tool used in one of station
- Plan for April Paradise Valley Restoration Festival which will consist of the 2nd grade field trip content for grades K-2 near Cottonwood Creek and the 3-8 grade students will travel to Singas Creek to learn about erosion and water quality and to participate in a replanting project.

Watershed Field Trip Final Statistics Report						
Humboldt County School District				**Elko County School District**		
Participating Schools	**# Students**	**# Parent Chaperones**		**Participating Schools**	**# Students**	**# Parent Chaperones**
McDermitt ES	19	n/a		Southside ES	113	20
Paradise Valley ES	11	n/a		Mountain View ES	97	24
Winnemucca Grammar	72	n/a		Northside ES	67	2
Sonoma Heights ES	85	n/a		Grammar School #2	72	9
Grass Valley ES	71	n/a				

Project title and Contractor:

Nevada Creeks and Communities Cadre and Proper Functioning Condition Evaluation

DEP S 12-050,University of Nevada, Reno

Primary Contact:

Sherman Swanson
Rangeland Management State Extension Specialist
1000 Valley Rd.
Reno, NV
sswanson@cabnr.unr.edu
775-784-4057

Project Location:

Statewide

Project Summary:

"Creeks and Communities: A Continuing Strategy for Accelerating Cooperative Riparian Restoration and Management" represents an innovative and adaptive approach aimed at building the capacity of land managers and stakeholders to address complex and often contentious issues inherent in managing riparian-wetland resources. It is a continuation of an effort initiated in 1996 by the Bureau of Land Management (BLM) and the Forest Service (FS), in partnership with the Natural Resources Conservation Service (NRCS). Focused primarily in the Western United States, this strategy is implemented by a diverse group of individuals and institutions referred to as the Creeks and Communities Network. This network includes the National Riparian Service Team (NRST), state riparian teams, and agency coordinators.

To address riparian related issues, the interagency NRST works full time in coordination with state teams and communities to employ principles and practices that incorporate resource science and also deal with the human and social dimensions resulting in a blend and balance of technology transfer and problem solving within activities. The Creeks and Communities is a vehicle for integrating science and technical information into collaborative decision making. Implementation fosters the creation of forums that enable individuals to interact with each other more effectively, placing emphasis on providing opportunities for individuals to work cooperatively, across all land ownerships and administrative jurisdictions, to share knowledge and develop a common understanding and vision for riparian-wetland areas on a landscape scale.

Start and Completion Dates:

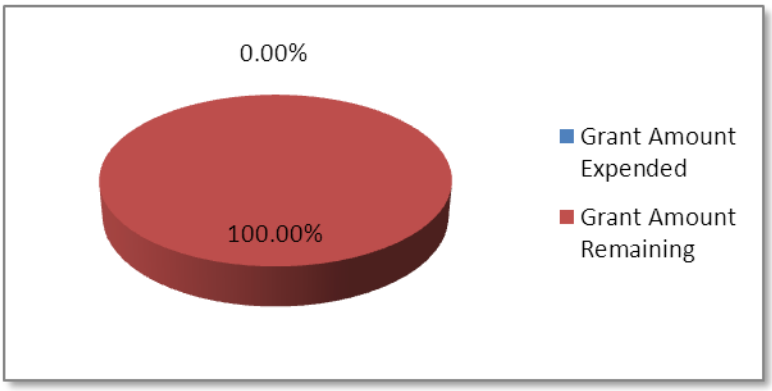
6/30/12-12/31/13

Fiscal Summary:

319(h) funds awarded	$20,000
Total amount of non-federal match funds	$20,000
Total Project Cost	$40,000.00

Total Grant Reimbursements through June 30, 2013:

$0



Project Partners:

TS Ranch
Hillside Design
Nevada Department of Wildlife
Bureau of Land Management
U.S. Forest Service
Natural Resources Conservation District

Background:

Riparian proper functioning condition (PFC) is increasingly recognized as the foundation for water quality as well as many other attributes and processes that sustain aquatic and terrestrial ecosystems. To be properly functioning, a riparian system: Dissipates stream energy associated with high water flows, thereby reducing erosion and improving water quality; Filters sediment, captures bedload, and aids floodplain development; Improves floodwater retention and groundwater recharge; Develops root masses that stabilize streambanks against cutting action; Develops diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding and other uses, and; Supports greater biodiversity (Prichard et al.,1993 and 1998). Connection to water quality from management, especially of vegetation, includes reduction of accelerated erosion; deposition of sediment (sediment is the most abundant pollutant across the US.); shade, narrowing of channels, and encouragement of hyporheic interchange (which stabilize temperatures especially important to cold-water fish which are often listed as the beneficial use driving water quality standards); aquifer recharge which augments groundwater discharge (of cold clear water); growth or riparian vegetation which extracts eutrophying nutrients (N, P, K, etc.) and slows the nutrient spiral; and creation or maintenance of habitats needed for biota (thus completing the chemical, biological, and physical components of water quality). Across Nevada thousands of miles of riparian systems are not functioning properly and consequently do not meet water quality standards. On BLM lands, as well as a sample of 40 stream reaches burned in recent fires, more reaches are functioning at risk or are nonfunctional than are functioning properly. Riparian PFC recovers from herbaceous and woody vegetation influences on channel form and then water quality. Furthermore, riparian functionality recovers naturally when management allows sufficient recovery to overcompensate for negative responses from riparian uses such as grazing.

Project Description, Goals and Objectives:

The overall goal(s) of the project include:

i. Teach the principles of riparian proper functioning condition assessment and its application for management and monitoring to a broad diversity of Nevada citizens, including private landowners, agency resource managers, teachers, conservationists, youth, and volunteers.

ii. Demonstrate the Creeks and Communities approach by facilitating the collaborative process for the permittees/adjacent landowners, Forest Service and other agency personnel, and other citizens interested in the Ruby Mountains District and surrounding lands.

iii. Exhibit a measurable outcome in increased education and understanding and show application of riparian restoration concepts at the conclusion of the project.

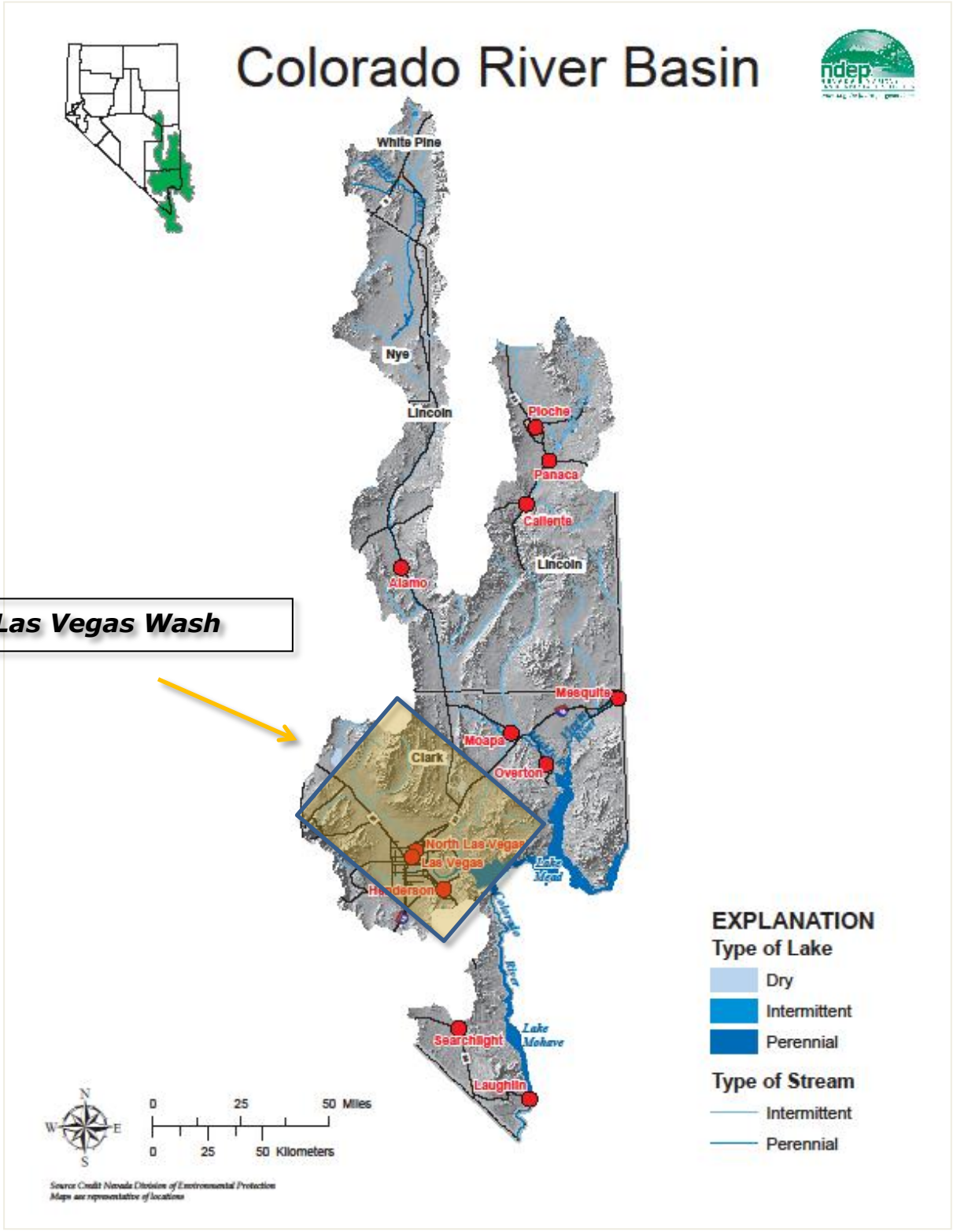
iv. Evaluate the effectiveness of PFC training. This evaluation will incorporate both the human and the environmental component. The human component will evaluate whether PFC training increases the likelihood of those trained to utilize the training and implement the practices. The environmental component will evaluate the impact of implementation of PFC practices on water quality and riparian restoration.

Progress in SFY 13:

Creeks and Communities held workshops and PFC trainings throughout the state. All work in the contract is now complete and all funds will be invoiced by 12/31/13.

Load reductions/outcomes/or ongoing:

No load reduction numbers are associated with this project, as it is education based.


Colorado River Basin
White Pine
Nye
Lincoln
Clark
Las Vegas Wash
Pioche
Panaca
Caliente
Lincoln
Alamo
Mesquite
Moapa
Overton
North Las Vegas
Las Vegas
Henderson
Lake Mead
Searchlight
Lake Mohave
Laughlin
EXPLANATION
Type of Lake
Dry
Intermittent
Perennial
Type of Stream
Intermittent
Perennial
N
W
E
S
0 25 50 Miles
0 25 50 Kilometers
Source Credit Nevada Division of Environmental Protection
Maps are representative of locations

Colorado River/Las Vegas Wash Watershed

Activities in the Las Vegas Wash are under the auspices of an interagency management entity called the Las Vegas Wash Coordination Committee, established in 1998. The Coordination Committee is comprised of representatives from 30 different federal, state and local agencies, as well as representatives from local businesses and environmental groups. A primary objective in forming this group was to ensure that all relevant and interested stakeholders have a voice in the long-term management and restoration of the Wash. The Coordination Committee completed the Comprehensive Adaptive Management Plan (CAMP) in January 2000 and identified 44 recommendations for restoring the health and water quality of the Wash. Objectives of the CAMP include the construction of erosion control structures and revegetation of wetlands habitat, while involving the public via education/outreach programs, in order to improve water quality in Lake Mead, the primary source of drinking water for Southern Nevada.

The plan was certified by the U.S. Environmental Protection Agency (USEPA) as meeting the nine required elements of a watershed plan. The Wash has also been identified by the USEPA as a Category I Priority Watershed under the 1998 Unified Watershed Assessment and is included on the Nevada 2004 303(d) List for iron. All tasks included in this project proposal implement or support components of the CAMP.

Over the past decade, significant progress has been made in stabilizing the Wash. Implementing CAMP recommendations have helped to reduce erosion, while increasing sedimentation and wetlands habitat, improving downstream water quality. Public education and other outreach efforts have contributed by increasing awareness and fostering a sense of community in the effort to reduce non-point source pollution and restore the Wash.

Key Watershed Partners

Clark County Water Reclamation District
Clark County Regional Flood Control District
Conservation District of Southern Nevada
Southern Nevada Water Authority
US Geological Survey

Pollution Category, Subcategory, and/or Sources of Pollution Addressed:

Agriculture
Construction
Urban runoff
Hydrologic and Habitat Modification

Project title and Contractor:

Clark County Pollution Prevention Education Program, DEP S 10-032-2

Clark County Water Reclamation District

Primary Contact:

Joseph R. Leedy
5857 E. Flamingo Road
Las Vegas, NV 89122
702-668-8673

Project Location:

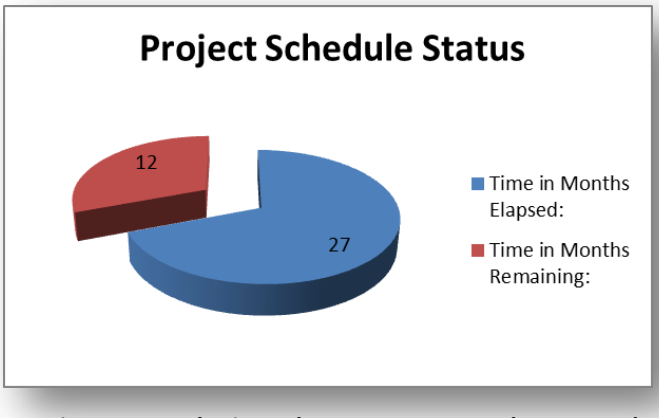
Colorado River Basin / Las Vegas Wash: Clark County, Nevada *Hydrographic Units:* 15010015, 15010005, 16030101, 16060015, and the portions of 16060014, 15010010, 15010006, and 15030102 within Clark County.

Project Summary:

The Clark County Water Reclamation District (Formerly the Department of Air Quality and Environmental Management) acknowledges the need for broad public education throughout Clark County Nevada about nonpoint source pollution, best management practices, and stormwater management practices to urban and rural communities and local watersheds. This project provides a distribution and communications mechanism to targeted audiences to get nonpoint source pollution, best management practices, and stormwater management information to the public effectively and efficiently. This project enhances citizen awareness about local individual efforts needed to reduce NPS pollution, and broad-scale societal and community actions needed to achieve long term improvements in water quality protection. This project promotes making a difference by effecting changes in stakeholder knowledge and attitudes about their environment.

Start and Completion Dates

April 1, 2011 to June 30, 2014



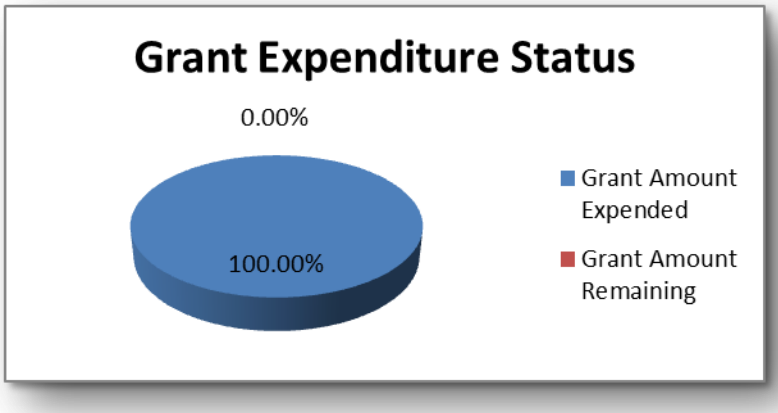
The project completion date was recently extended 12 months to allow Clark County staff to complete tasks outstanding in the project scope of work. Additional time was needed because of a District position becoming vacant in the fall of 2012 which has yet to be backfilled as of June 30, 2013. Grant funds awarded have been expended. Remaining expenditures necessary to complete the project will be allocated towards match.

Fiscal Summary:

	Original	Amended	Total
319(h) funds awarded	$54,027.00	$20,000.00	$74,027.00
Total amount of non-federal match funds	$54,366.00	$20,032.59	$74,398.59
Total Project Cost	$108,393.00	$40,032.59	$148,425.59

Total Grant Reimbursements through June 30, 2013:

$74,027.00



Project Partners:
Las Vegas Wash Coordination Committee
Southern Nevada Water Authority
Conservation District of Southern Nevada.

Photograph(s):

BMP Manuals and NPS Outreach Materials produced by Clark County Water Reclamation District.

Background:

This public outreach effort is funded by two 319(h) grants. A second Subgrant Agreement funds continuation of outreach efforts directed towards residents, businesses, and students. The scope of work in the second agreement does not continue outreach efforts aimed at the hospitality sector.

Project Description, Goals and Objectives:

- To educate residents, businesses, and students of the need to improve water quality in tributaries leading to Lake Mead, their primary source of drinking water. To facilitate a behavioral change by making residents, businesses, and students better informed about natural resource issues and how personal habits and lifestyles impact their environment.
- Present cost-effective and environmentally-protective best management practices and solutions to encourage behavioral changes that result in stormwater runoff and NPS pollution.
- To develop a marketing campaign with a strong educational component to:
  - Educate residents, businesses, and students' on issues surrounding stormwater runoff, NPS pollution and Best Management Practices using effective marketing strategies.
  - Develop NPS educational materials and make them available to the Clark County School

District and other organizations to help educate students on stormwater runoff, NPS pollution and water quality protection. Provide educational materials to teachers to incorporate into their curricula.

- Broaden and strengthen goals of the Nevada NPS Management Program by reaching out to broad-scale and diverse audiences.

- Provide a distribution and communications mechanism to distribute nonpoint source pollution, best management practices, and stormwater management information effectively and efficiently to the employers and employees within the hospitality industry in Clark County.
  - Address the non-point source pollution impact of the tourism corridor in Las Vegas, Nevada, through a targeted outreach and education process aimed at leisure and hospitality employers and employees.
  - Outreach and public education through educational training sessions and a targeted marketing campaign.

Progress in SFY 13:

Work completed in SFY 13 brought this project to near completion; however, the outreach effort directed at the hospitality sector was added as an amendment to the original scope of work. Under the original scope of work, development of Best Management Practices Manuals for urban and rural residents and for businesses had largely been completed. A draft BMP manual aimed at the hospitality sector has been completed. Public outreach events were ongoing, as were the distribution of previously developed marketing materials, and the airing of radio PSA's.

Tasks remaining include completion of the hospitality directed outreach program. This includes twelve additional training programs aimed at casino employees.

Load reductions/outcomes/or ongoing:

No direct load reductions may be attributed to this project. Outcomes include the completion of education and other outreach events with a total of 1802 attendees to date, the distribution of thousands of outreach materials (rulers, pencils, magnets, key chains, lip balm) reminding persons about the nonpoint source message delivered, and the completion of the BMP manuals whose distribution will continue beyond the life of the grant.

Project title and Contractor:

Initiatives to Reduce Nonpoint Source Pollution in Southern Nevada, DEP S 11-018

Southern Nevada Water Authority

Primary Contact:

Kathleen Flanagan
5857 E. Flamingo Road
Las Vegas, NV 89122
702-258-3173

Project Location:

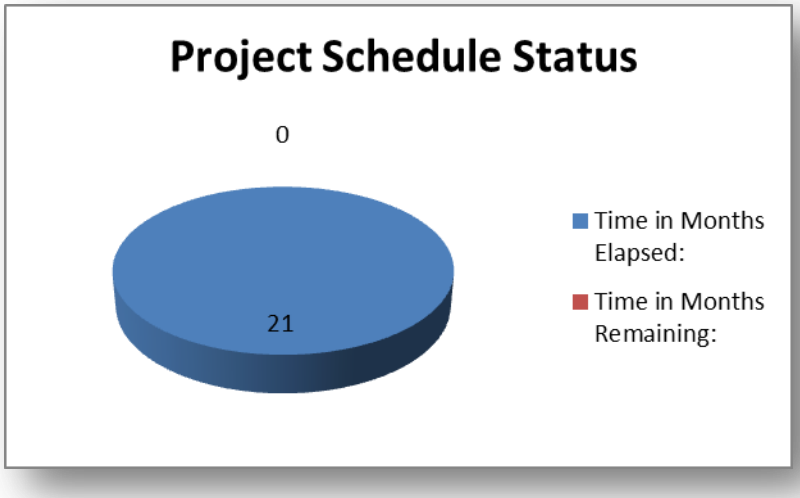
Colorado River Basin / Las Vegas Wash
Las Vegas Wash, Clark County, Nevada. USGS 8-Digit HUC: 15010015

Project Summary:

Project funding will be used to implement objectives of the Las Vegas Wash Comprehensive Adaptive Management Plan (CAMP) and Lake Mead Water Quality Forum. These objectives include revegetation, erosion control, water quality improvement, and public education and outreach efforts. Specific tasks identified for funding include (1) water quality data management program; (2) implementation of two Wash "Green-Up" events; (3) run a variety of stormwater public service announcements all with the shared theme of non-point source pollution prevention; (4) Mabel Hoggard Math and Science Magnet School field trips for elementary students; and (5) implementation of a stormwater pollution poster contest.

Start and Completion Dates

March 24, 2011 – December 31, 2012

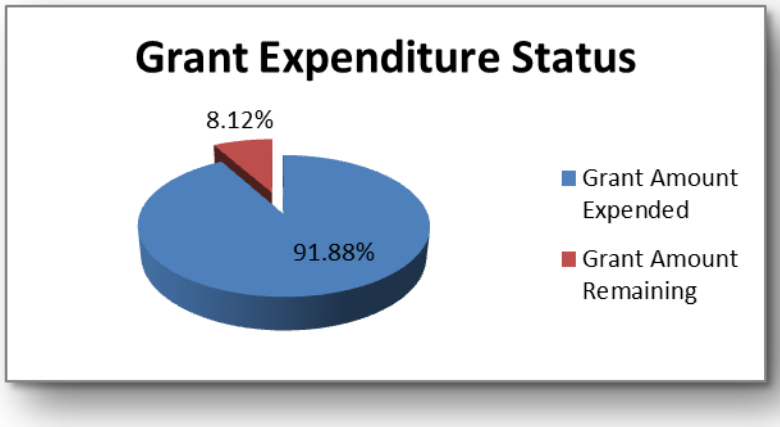


Fiscal Summary:

319(h) funds awarded	$107,100.00
Total amount of non-federal match funds	$110,720.00
Total Project Cost	$217,820.00

Total Grant Reimbursements through December 31, 2012:

$98,406.18



This project was completed December 31, 2012 *under budget*. Unexpended grant funds were re-obligated back to the state.

Project Partners:
Lake Mead Water Quality Forum
Las Vegas Wash Coordination Committee
Clark County Regional Flood Control District
Conservation District of Southern Nevada
Mabel Hoggard math and Science magnet School

Photograph(s):

Green-Up Event Volunteers walk towards their "Revegetation Sector" on the Las Vegas Wash. Potted plants are to be placed in pre-excavated holes where tamarisk stands have been previously removed. Irrigation equipment has been installed previously, and the soil surface has been hyrdroseeded.

A ten year-old Green-Up site, with established native vegetation. Irrigation equipment is to be moved to new Green-Up sites on the wash.

Background:

The Las Vegas Wash Coordination Committee completed the Las Vegas Wash Comprehensive Adaptive Management Plan (CAMP) in January 2000 and identified 44 recommendations for restoring the health and water quality of the Wash.

Objectives of the CAMP include the construction of erosion control structures and revegetation of wetlands habitat, while involving the public via education/outreach programs, in order to improve water quality in Lake Mead, the primary source of drinking water for Southern Nevada.

The plan was certified by the U.S. Environmental Protection Agency (USEPA) as meeting the nine required elements of a watershed plan. The Wash has also been identified by the USEPA as a Category I Priority Watershed under the 1998 Unified Watershed Assessment and is included on the Nevada 2004 303(d) List for iron. All tasks included in this project proposal implement or support components of the CAMP.

Over the past decade, significant progress has been made in stabilizing the Wash. Implementing CAMP recommendations have helped to reduce erosion, while increasing sedimentation and wetlands habitat, improving downstream water quality. Public education and other outreach efforts have contributed by increasing awareness and fostering a sense of community in the effort to reduce non-point source pollution and restore the Wash.

Project Description, Goals and Objectives:

Goal #1. Improve water quality in the Las Vegas Wash and Las Vegas Bay of Lake Mead to meet water quality standards for the support of beneficial uses.

Objective 1.a. Stabilize the Las Vegas Wash channel to reduce sediment loads to Lake Mead.

Task 1. Involve the community in habitat restoration activities by implementing two "Wash Green-Up" events that will result in the revegetation of 20-30 acres at two locations in the Wash. Revegetation efforts include the introduction of a variety of native-stock emergents, as well as trees and shrubs such as willows, creosote, mesquite and cottonwoods. This work will be implemented according to methods outlined in the CAMP and the Las Vegas Wash Revegetation Management Plan (see Project Location Map—specific sites to be determined).

Objective 2.a. Implement the Water Quality Data Management Program.

Task 1. Upload and manage profile data from water quality instruments on Lake Mead, and upload laboratory data from High Sierra, Weck, and MWH laboratories for water quality programs on the Las Vegas Wash and Lake Mead. The work will also include assisting other agencies with formatting and uploading data, encouraging other agencies to participate in providing data as a regional water quality resource, performing quality assurance checks on the data sets, and providing customer assistance for problems in using the data management program.

Goal #2. Address non-point source pollution through public education and outreach.

Objective 3.a. Perform outreach activities to inform and educate the community and encourage local stewardship.

Task 1. Implement two "Wash Green-Up" events to allow the community an opportunity to volunteer in the revegetation and restoration of the Las Vegas Wash. Green-Up events consist of more than 1,000

volunteers planting native trees and shrubs each year in areas recently cleared of invasive plant species. (See Objective 1.a., Task 1 above and Project Location Map below).

Task 2. Run a variety of stormwater Public Service Announcements (PSAs) with the shared theme of non-point source pollution prevention. These PSAs will be implemented by the Clark County Regional Flood Control District and broadcast on the major network stations during the spring and fall of 2011.

Task 3. The Las Vegas Wash Coordination Committee has partnered with the Mabel Hoggard Math and Science Magnet School for more than 10 years to introduce elementary students to the Las Vegas Wash. NDEP grants have previously funded each student with a "reconnaissance backpack" filled with a set of binoculars, a Global Positioning System (GPS) unit to use during the field trip as well as a custom notebook for students to record field data and to keep for their reference. The current field trip itinerary allows for each fifth grade class to spend a full day at the Las Vegas Wash receiving a tour of the Alford Merritt Smith Water Treatment Facility and another full day on Lake Mead aboard the Forever Earth Environmental Education and Research houseboat operated by the UNLV Public Lands Institute where they participate in several water quality activities. The proposed new funds would be used to cover costs associated with these field trips (vehicle and Forever Earth field costs and other materials) and replace broken or worn out field trip equipment (i.e. backpacks, GPS units and binoculars).

Task 4. Conduct education campaign, including a "Stormwater Pollution Poster Contest" implemented by the Conservation District of Southern Nevada.

Progress in SFY 13:

This project was completed December 31, 2012, with two Green-Up events having occurred, public service announcements completed, field trips for the 2011-2012 school year completed, and the stormwater pollution poster contest done. Water quality data management tasks and public outreach evaluations were completed and a Project Final Report was provided to NDEP.

Load reductions/outcomes/or ongoing:

Load reductions were calculated for this project which is attributed to source control afforded by the Green-Up efforts:

Nitrogen	2.2	LBS/YR
Phosphorus	.2	LBS/YR
Sedimentation-Siltation	.1	TONS/YR

Green-Up Events are conducted on the wash's floodplain terrace in part to keep volunteers a safe distance from flowing water. Additional benefit derived from conducting Green-Up Events is the public outreach opportunity and the ability to provide direct NPS pollution reduction messages to hundreds of citizens of all ages every year.

Significant load reductions have been attributed to the construction of several weirs and constructed wetlands directly within the flow path of the wash. These efforts have been completed with the expenditure of millions of dollars which have been provided by other funding sources, most notably the Southern Nevada Public Lands Management Act Program.

A weir under construction in the Las Vegas Wash. Total cost: Greater than $20 Million.

Project title and Contractor:

Clark County Floatable Trash Reduction Program, DEP S 12-019

Clark County Water Reclamation District

Primary Contact:

Joseph R. Leedy
5857 E. Flamingo Road
Las Vegas, NV 89122
702-668-8673

Project Location:

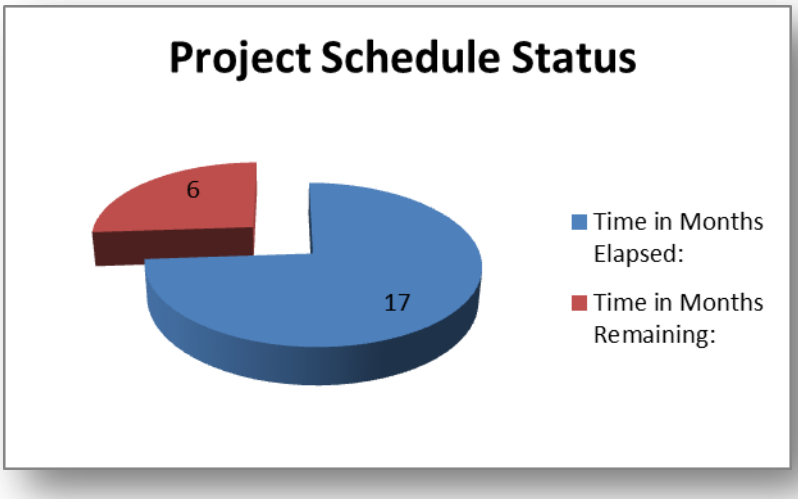
Colorado River Basin / Las Vegas Wash
USGS Hydrographic Region: Colorado River/Las Vegas Wash
Clark County
8-Digit USGS HUCs: 15010005 Lake Mead
15010010 Lower Virgin
15010012 Muddy
15010015 Las Vegas Wash

Project Summary:

This project includes the design, installation, and maintenance of a trash boom placed across a main tributary of the Las Vegas Wash, or the Wash itself to aid in floatable trash removal. The boom will limit the amount of trash entering the Clark County Wetlands Park and the Las Vegas Wash system.

Start and Completion Dates:

January 31, 2012 – December 31, 2013



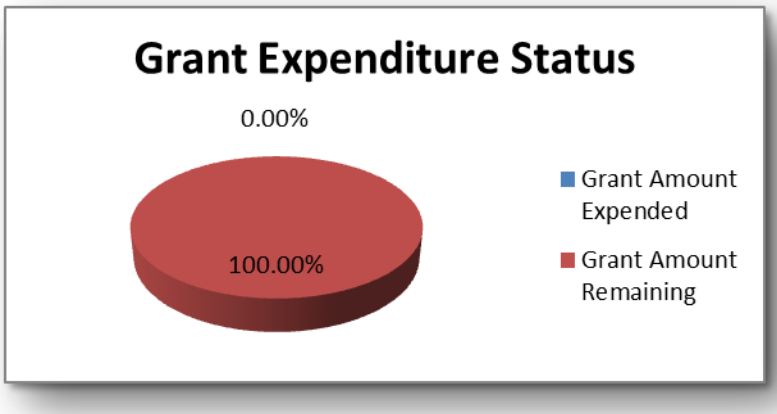
A term extension request is anticipated to allow more time to monitor effectiveness of the trash boom.

Fiscal Summary:

319(h) funds awarded	$72,500.00
Total amount of non-federal match funds	$73,879.00
Total Project Cost	$146,379.00

Total Grant Reimbursements through June 30, 2013:

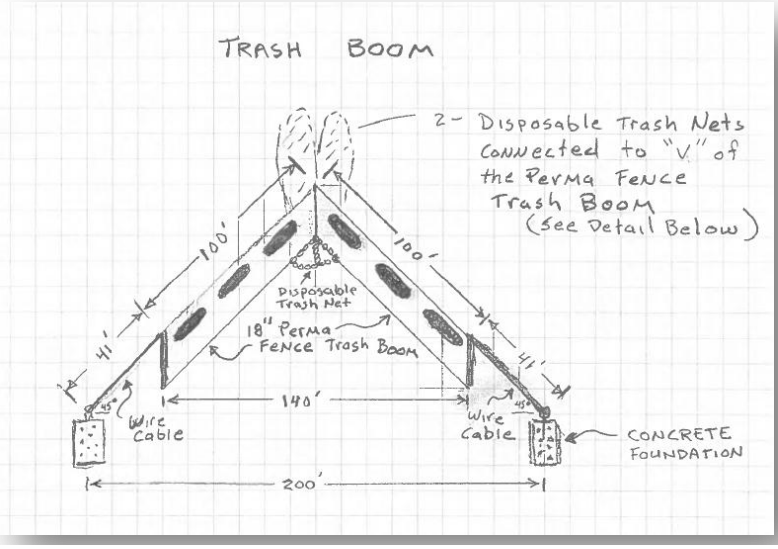
$0



Project Partners:
Southern Nevada Water Authority

Photograph(s):

Trash and debris in Duck Creek Wash, tributary to Las Vegas Wash. Much of the debris seen here will be removed via installation of a trash boom across the Las Vegas Wash.



A schematic of the selected Trash Boom design.

Background:

In the Las Vegas Valley rainwater and precipitation is channeled into the roads, gutters, washes, and storm drain systems and flows untreated to the Las Vegas Wash and Lake Mead, Southern Nevada's primary source of drinking water. As this water moves across the Valley, it picks up litter, lawn debris, and other floatable materials.

The southwestern and southern portions of the Las Vegas Valley drain through an organized network of storm drains and converge at Duck Creek. Duck Creek flows east through the Clark County Wetlands Park before emptying into the Las Vegas Wash. While trash is carried downstream by the Las Vegas Wash at all times, it is most prevalent during rain events. During these events, floatables flow through the wash system, and cause impeded storm flow, flooding, and pose a danger to wildlife living in and around the Las Vegas Wash.

Project Description, Goals and Objectives:

This program will provide a mechanism to collect floatable trash from the stormwater flow originating in the southwest and southern portions of the Las Vegas Valley. The collection of the trash will be accomplished through the installation of a trash boom designed to intercept and contain floatable debris. The assemblage of trash at a common location will not only keep the garbage from entering the Clark County Wetlands Park and Las Vegas Wash system, but it will provide a single location in which to focus clean-up efforts.

Progress in SFY 13:

Through state fiscal year 2013 Clark County Water Reclamation District solicited manufacturers of various booms to determine what configuration will be most effective in removing trash from the wash at the most economical cost. Concurrently, the District completed a hydraulic analysis to determine the boom's impact on flood elevations. The analysis determined that the boom would contribute less than a tenth of an inch elevation increase in its "breakaway" configuration. Note that completion of this analysis was not anticipated to be needed when the project was originally planned.

The boom's anchor on one side is designed to break away during major flood events to prevent a significant rise in flood elevations. During moderate flows, the bottom of the boom will ride on the water's surface, allowing flow to pass unimpeded.

The boom is designed to capture most debris during low flows, and funnel the debris into a detachable balloon net that may be removed from the boom and transported to a land fill.

With the hydraulic analysis complete and the boom configuration selected, the project is ready to be put out to bid and scheduled for construction. Much of the required project cost share has been expended on project planning and approval. The majority of 319(h) grant funds will be expended on materials and installation. Following installation, it is desired to monitor the boom's effectiveness for at least 12 months. To insure that additional monitoring of boom performance can take place, a term extension has been requested.

Load reductions/outcomes/or ongoing:
Load reduction numbers will be calculated directly as trash is removed from the boom.

Project title and Contractor:

Clark County Pollution Prevention Education Program, DEP S 12-023

Clark County Water Reclamation District

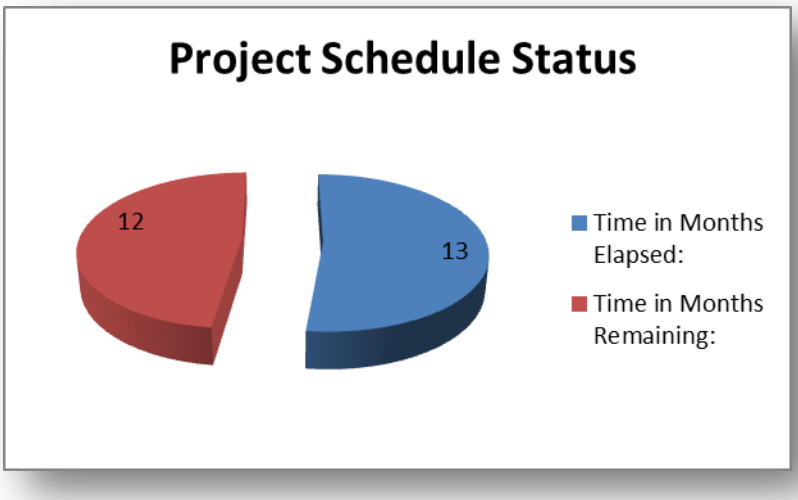
Primary Contact:

Joseph R. Leedy
5857 E. Flamingo Road
Las Vegas, NV 89122
702-668-8673

For project background and Scope of Work details, see Clark County Pollution Prevention Education Program, DEP S 10-032-1 above. This project is identical except for the grant award amount, project term and the exclusion of BMP Manual development and the hospitality sector outreach component. Note that the previously developed Citizen's Guide to Controlling Polluted Runoff is to be translated into Spanish.

Start and Completion Dates

May 16, 2012 to June 30, 2014

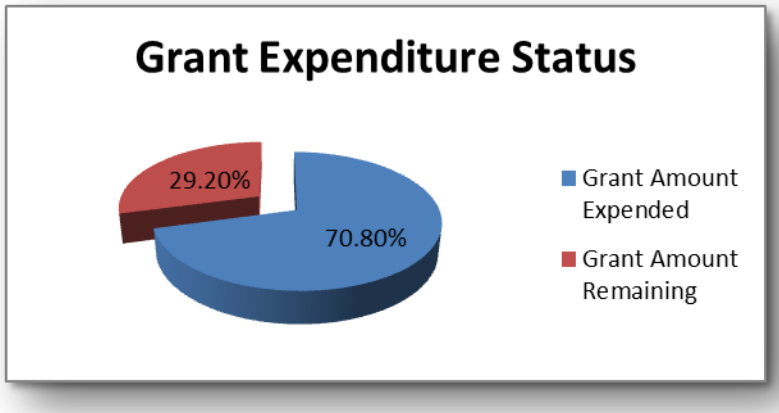


Fiscal Summary:

319(h) funds awarded	$52,189.00
Total amount of non-federal match funds	$52,189.00
Total Project Cost	$104,378.00

Total Grant Reimbursements through June 30, 2013:

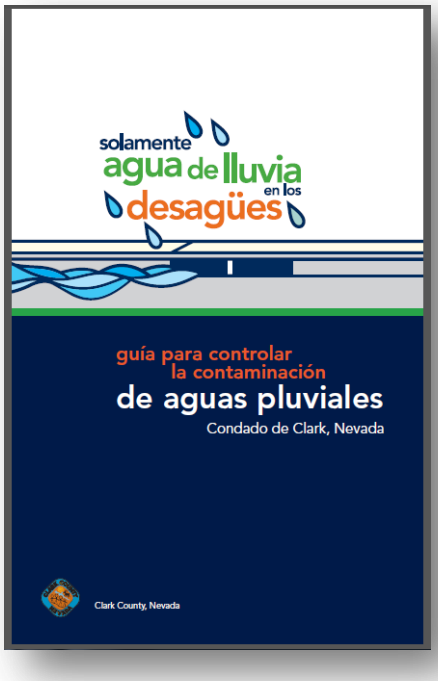
$36,947.36



Project Partners:
Las Vegas Wash Coordination Committee
Southern Nevada Water Authority
Conservation District of Southern Nevada

Progress in SFY 13:
This project continues its targeted advertising campaign utilizing radio PSAs via National Public Radio, Entravision – A Spanish Language radio station, Clear Channel, and Vector Media (Bus advertisement). Translation of the Citizen's Guide from English to Spanish was completed.

Load reductions/outcomes/or ongoing:
No direct load reductions may be attributed to this project.



Project title and Contractor:

Initiatives to Reduce Nonpoint Source Pollution in Southern Nevada, DEP S 12-020

Southern Nevada Water Authority

Primary Contact:

Kathleen Flanagan
5857 E. Flamingo Road
Las Vegas, NV 89122
702-258-3173

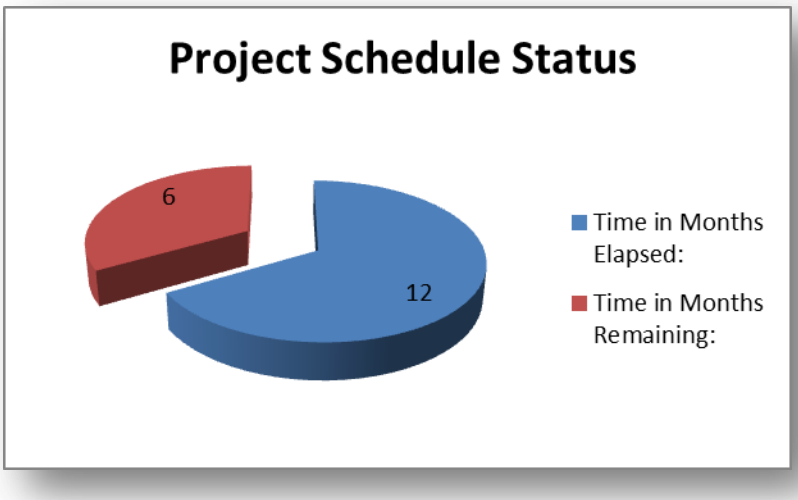
Project Location:

Colorado River Basin / Las Vegas Wash
Las Vegas Wash, Clark County, Nevada. USGS 8-Digit HUC: 15010015

For project background and Scope of Work details, see Initiatives to Reduce Nonpoint Source Pollution in Southern Nevada, DEP S 11-018 above. This project is identical except for the grant award amount, project term and the exclusion of the Water Quality Data Management task, which is covered by another funding source (Section 106 Clean Water Act grant funding).

Start and Completion Dates

June 28, 2012 to December 31, 2013



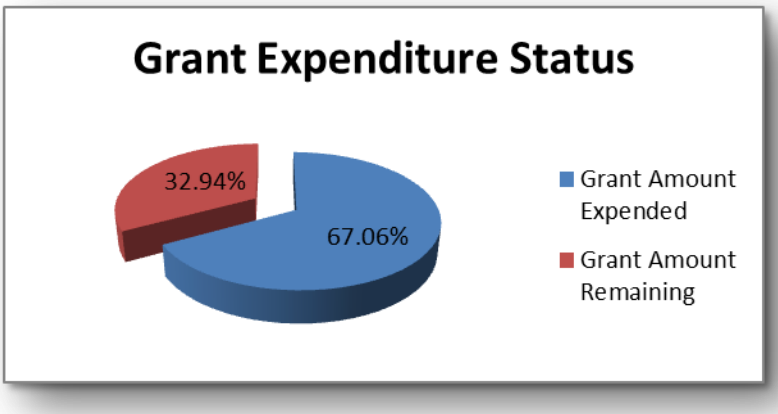
Fiscal Summary:

319(h) funds awarded	$55,265.00*
Total amount of non-federal match funds	$106,545.00
Total Project Cost	$211,810.00

*This project budget also includes $50,000.00 in CWA Section 106 Grant Funds.

Total Grant Reimbursements through June 30, 2013:

$37,061.16



Progress in SFY 13:

A spring Green-Up Event was conducted in concert with the Grand Opening of the Clark County Wetland Nature Center in March, 2013. The fall Green-Up Event was conducted the previous October (Task Complete). Public service announcements aired by the Regional Flood Control District continued, three Mabel Hoggard field trips were held, and the Conservation District of Southern Nevada conducted its Stormwater Pollution Poster Contest with the Clark County School District.

The winning Stormwater Pollution Poster was created by Fourth Grader Jordan Castro from Elise L. Wolff Elementary School, shown below:

Load reductions/outcomes/or ongoing:

Load reductions attributed to this project will be modeled and reported at the end of the 2012 calendar year.

Project title and Contractor:

Initiatives to Reduce Nonpoint Source Pollution in Southern Nevada, DEP S 13-016

Southern Nevada Water Authority

Primary Contact:

Kathleen Flanagan
5857 E. Flamingo Road
Las Vegas, NV 89122
702-258-3173

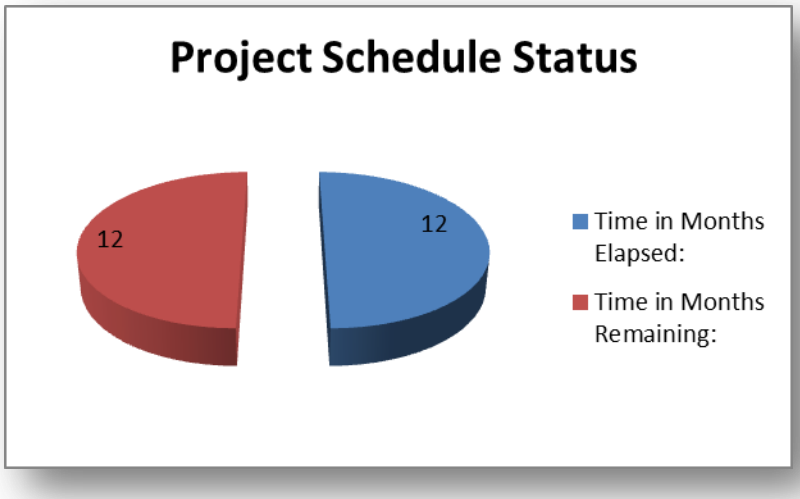
Project Location:

Colorado River Basin / Las Vegas Wash
Las Vegas Wash, Clark County, Nevada. USGS 8-Digit HUC: 15010015

This project continues efforts by SNWA completed under Subgrant Agreements executed in year's 2011 and 2012, however, funding of the Data Management Program has been discontinued, and the Stormwater Pollution Poster contest was not included in the Scope of Work. The poster contest was dropped because of a change in staffing with the Conservation District of Southern Nevada. The Subgrant Agreement was only recently executed in March, 2013; project tasks are primarily in the planning stages for completion in upcoming quarters.

Start and Completion Dates

June 28, 2012 to June 30, 2014

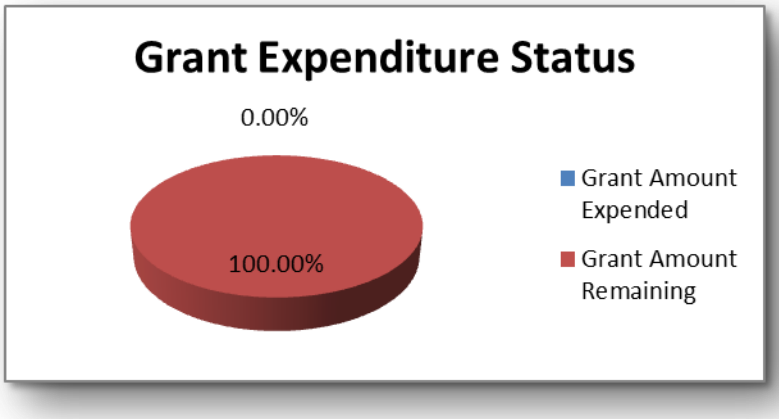


Fiscal Summary:

319(h) funds awarded	$105,265.00
Total amount of non-federal match funds	$106,545.00
Total Project Cost	$211,810.00

Total Grant Reimbursements through June 30, 2013:

0$



Project title and Contractor:

Clark County Dog Waste Collection Program, DEP S 13-018

Clark County Water Reclamation District

Primary Contact:

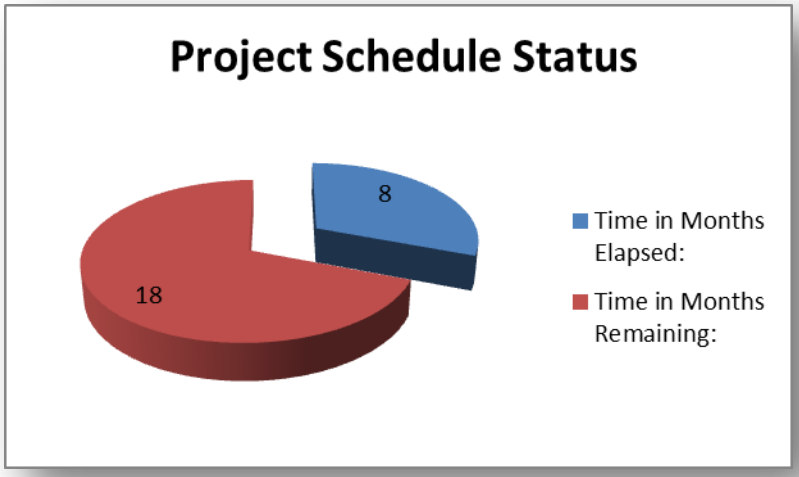
Joseph R. Leedy
5857 E. Flamingo Road
Las Vegas, NV 89122
702-668-8673

Project Summary:

This project will include the installation of dog waste stations in communities within Clark County and will educate the community on the importance of picking up after their dogs. The purpose of the program is to reduce the amount of nitrogen and phosphorus entering the Las Vegas Wash and Lake Mead.

Start and Completion Dates

April 25, 2013 to June 30, 2015

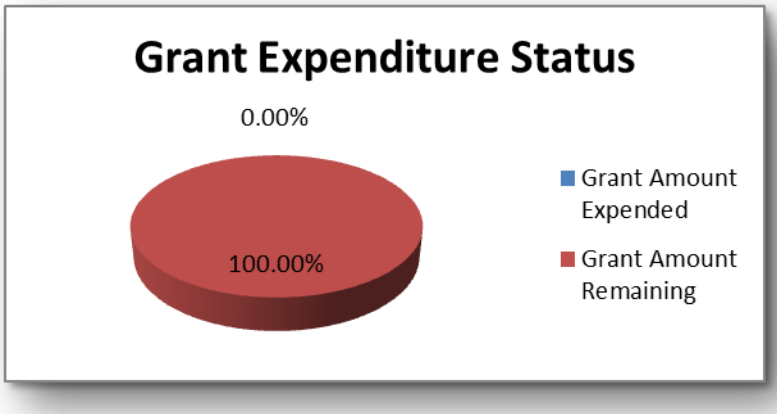


Fiscal Summary:

319(h) funds awarded	$39,063.00
Total amount of non-federal match funds	$39,064.00
Total Project Cost	$78,127.00

Total Grant Reimbursements through June 30, 2013:

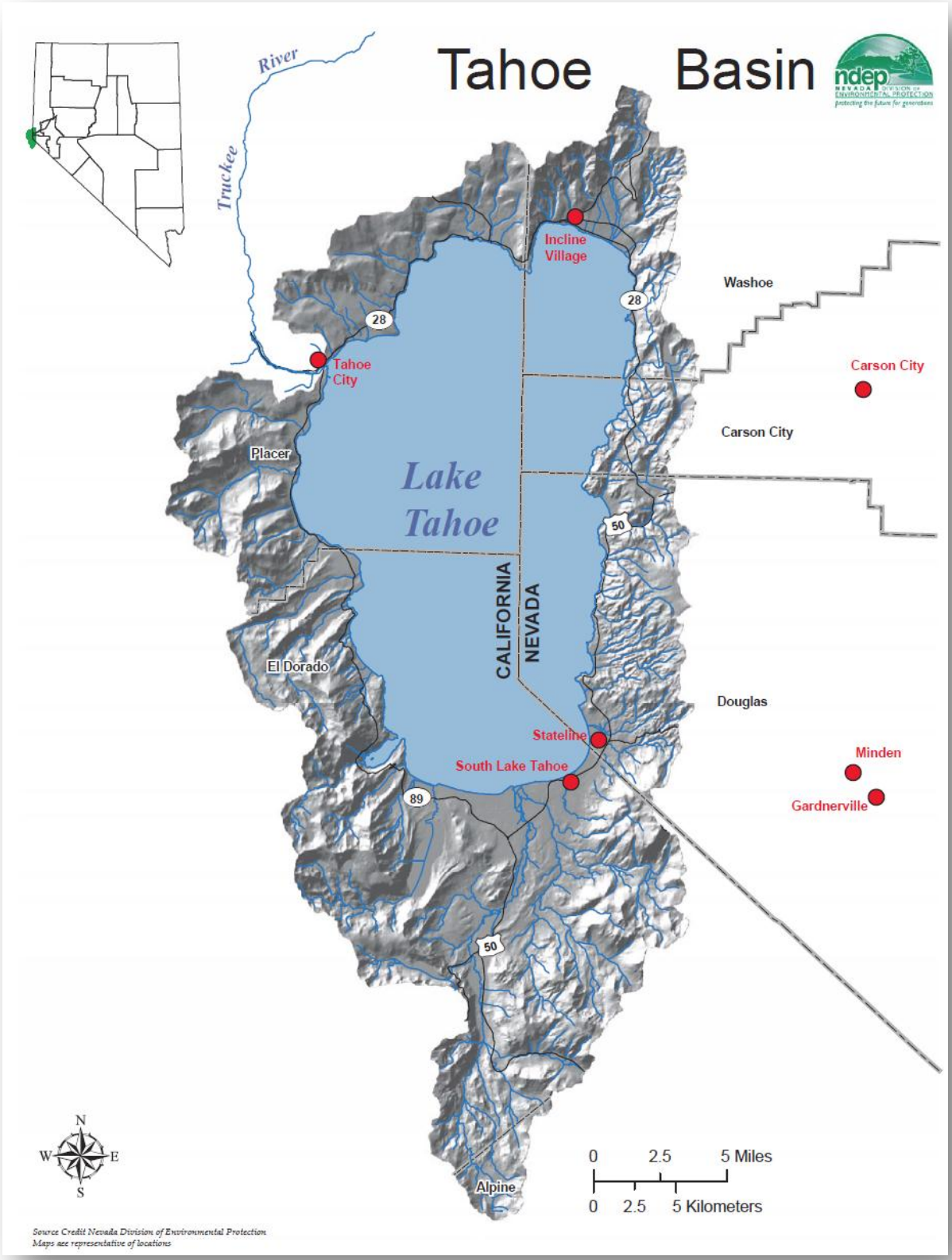
0$



Project Partners:
None

Progress in SFY 13:
Work on this project has yet to commence in part due to workload issues with the District. The District's Planner position became vacant in the fall of 2012, and has yet to be backfilled. Efforts towards completion of the project's tasks are expected to begin in the third quarter of the 2013 calendar year. Initial tasks include determining the locations for installation of Dog Waste Pick-Up Stations.

Load reductions/outcomes/or ongoing:
Reductions in nitrogen and phosphorus loadings will be directly measured and reported to NDEP upon project completion.

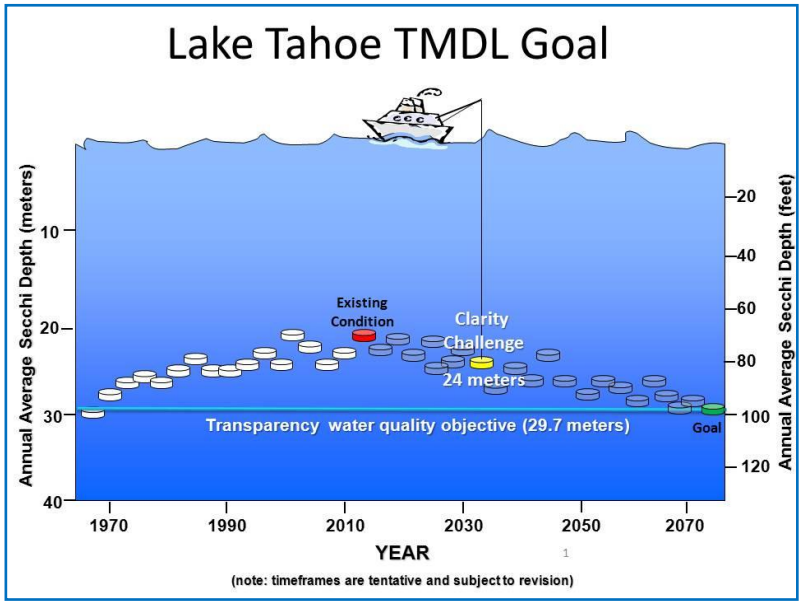

Tahoe Basin
Truckee River
Incline Village
Washoe
28
Tahoe City
Carson City
Carson City
Placer
Lake Tahoe
50
CALIFORNIA
NEVADA
El Dorado
Douglas
Stateline
Minden
South Lake Tahoe
Gardnerville
89
50
Alpine
N
W
E
S
0 2.5 5 Miles
0 2.5 5 Kilometers
Source Credit Nevada Division of Environmental Protection
Maps are representative of locations

The Lake Tahoe Basin

Examination of in-lake monitoring data collected by the University of Davis' (UCD) Tahoe Center for Environmental Sciences (TERC) since 1968 reveals a steady trend of loss in the Lake's transparency and clarity. Consequently, NDEP included the waterbody on its 2002 303(d) List of Impaired Waterbodies due to exceedances in the state's clarity standard. To address this problem, NDEP collaborated with the California Regional Water Quality Control Board, Lahontan Region (Lahontan Water Board) to develop the Lake Tahoe Total Maximum Daily Load (TMDL). Development of the TMDL, a decade-long effort underpinned by the best available science and a robust stakeholder input process, was initiated to better understand the causes of lake clarity loss and to provide a cost-effective restoration implementation framework.

Approved by USEPA in August 2011, the Lake Tahoe TMDL (NDEP 2011) quantified the relative contributions of fine sediment, phosphorus, and nitrogen inputs to Lake Tahoe from major pollutant sources; quantified load reductions needed from the four controllable sources (urban land uses, forestlands, stream channel erosion, and atmospheric deposition) to achieve the TMDL numeric and interim (Clarity Challenge) targets of 29.7 and 24 meters respectively; and established a recommended strategy to achieve pollutant load reductions needed to restore lost clarity.

The Lake Tahoe TMDL together with its Implementation Plan and supporting documents serve as the watershed-based plan for the Lake Tahoe Basin which meets the nine USEPA required elements. The TMDL Implementation Plan will guide restoration efforts for the aforementioned sources of pollutants responsible for the clarity decline. The plan calls the implementation of actions to control and reduce fine sediment, phosphorus, and nitrogen pollutant loads by state departments of transportation and local municipalities, land and stream resource management agencies, and air quality regulators. Key roles and responsibilities of implementing agencies are outlined in the TMDL document. However, NDEP will continue to collaborate with the Lahontan Water Board to provide continued oversight of TMDL implementation with technical and financial support from EPA.



Key Watershed Partners

California Regional Water Quality Control Board, Lahontan Region
Douglas County
Nevada Department of Transportation
Nevada Division of State Lands
Nevada Tahoe Conservation District
Tahoe Regional Planning Agency
UC Davis Tahoe Environmental Research Center
US Army Corps of Engineers
US Bureau of Reclamation

US Forest Service – Lake Tahoe Basin Management Unit
US Fish and Wildlife Service
US Geological Survey
Washoe County

Pollution Category, Subcategory, and/or Sources of Pollution Addressed:

Pelagic Lake Clarity and Transparency
Construction
Urban runoff
Hydrologic and Habitat Modification

Project title and Contractor:

Hybrid BMP Retrofit for a Primary Roadway, DEP S 10-024

Nevada Tahoe Conservation District

Primary Contact:

Michael Pook
Nevada Tahoe Conservation District
PO Box 915, Zephyer Cove, NV 89448
775-586-1610 ext. 34

Project Location:

Incline Village, Washoe County
8-Digit USGS HUC: Lake Tahoe 16050101

Project Summary:

The Hybrid BMP project will produce the design and construction of bioretention basins along a residential road and a study of the hydrologic and water quality effects of the installed basins to characterize pollutant and stormwater control. Different basin designs will be engineered and a minimum of five basins are proposed. The relative capacity of different basin designs to retain stormwater and fine sediment particle load will be monitored and estimated. The stormwater runoff volume and water quality of the treatment (upper) catchment will be monitored and compared with a control (lower) catchment. The basins will be inspected and maintained and maintenance activities and costs tracked. Adjacent homeowners will be informed of the project, offered the opportunity to landscape the basin, and will be surveyed to obtain information on their perceptions of the BMPs. The study hypothesis is that retrofitting a residential stormwater system with bio-retention basins has the potential to be a viable and cost-effective alternative for removing a significant fraction of the fine sediment and stormwater runoff in the Lake Tahoe Basin.

Start and Completion Dates:

July 1, 2010 – June 30, 2014

Fiscal Summary:

319(h) funds awarded	$85,200.00
Total amount of non-federal match funds	$183,517.00
Total Project Cost	$417,478.00

Total Grant Reimbursements through June 30, 2013:

$81,225.51

Project Partners:

Desert Research Institute
Washoe County
Natural Resources Conservation Service
Tahoe Regional Planning Agency

Background:

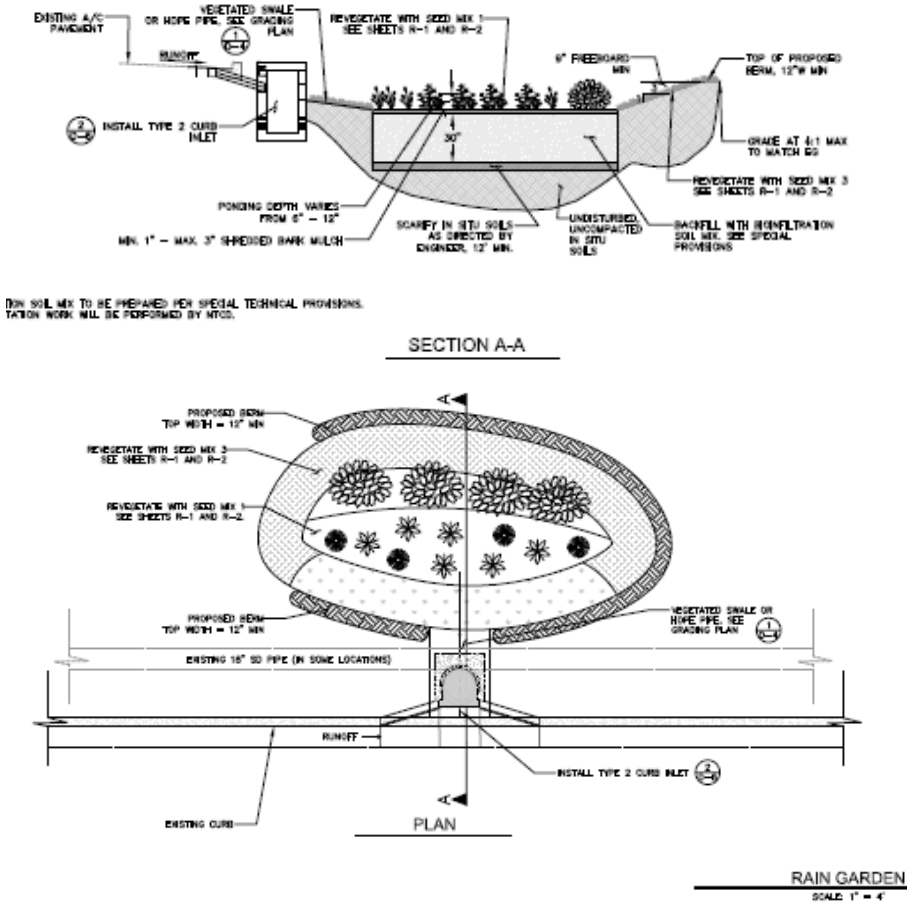
The implementation plan for the Lake Tahoe TMDL focuses on the control of fine sediment particles (<16 µm) to restore lake clarity. Pollutant controls that effectively remove fine sediment particles (FSP, < 16 µm) from urban stormwater or reducing stormwater volume reaching Lake Tahoe are needed. Conventional stormwater treatment devices used to remove total suspended sediment generally do not perform effectively as FSP sinks. Alternatively, BMPs designed with low impact development concepts; in particular, rain gardens or bioretention basins configured to retain and infiltrate stormwater runoff during frequent, small runoff events as well as during the "first flush" of larger events, present a potentially effective FSP control option. This project proposes to test this concept.

The general concept for this project follows a similar project implemented by the Minnesota city of Burnsville. To reduce stormwater pollutant loads delivered to a lake, the city retro-fitted an existing stormwater conveyance system with 17 rain gardens or "bioretention" basins. The bioretention basins were installed along a residential street in the right-of-way and designed to retain runoff from a 0.9 inch storm. The design basically consists of an excavated basin backfilled with mulch and engineered soils to increase infiltration, a single curb-cut for an inlet, no outlet, and vegetated or mulched surface. The operation is simple: runoff in the gutter enters the basin via the curb cut and when full, runoff flows past to the next curb cut or drop inlet. The residential property owner maintained flowers and shrubs planted over the basin and the city maintained basin operation. Monitoring results indicate the retro-fitted catchment reduced stormwater volume by 90% compared to a control catchment. Although water quality was not monitored, Burnsville project staff reported the "off-line" design very effectively removed first flush pollutants.

The project area is in Incline Village, Nevada, along Village Boulevard at the same location used for the NTCD Pilot Sweeper Study (winter 2008/2009 and continuing in 2009/2010). The hydrologic characteristics of two adjacent catchments were found to be similar during the Sweeper Study (linear regression coefficient (R2) of 0.91), enabling a paired catchment design for this study. Village Boulevard is heavily traveled and lined with curb and gutter. Road runoff is collected at drop inlets and conveyed to a treatment system consisting of a CDS hydro-dynamic separator followed by a small detention basin. Treated stormwater discharges from the detention basin into Rosewood Creek.

During the winter 2008/2009 study period, snow melt often occurred daily. The snow melt flowed along the street gutter which contained the vast majority of road sediment. The fine sediment concentration in the runoff water samples was relatively high. A surprisingly large mass of fine sediment was found in drop inlet sumps and in the stormwater system's terminal detention basin (Brown and Susfalk, 2009). Since street sweeping is not performed immediately after a snow event while snow melt runoff occurs, retrofitting a stormwater system with distributed, offline bioretention basins capable of infiltrating runoff and capturing FSP during inclement conditions presents an attractive alternative and warrants study.

Typical rain garden design from Hybrid BMP project record drawings supplied by contractor.



Project Description, Goals and Objectives:

Goal: To evaluate the viability of the bioretention basins as a stormwater pollutant control capable of significantly reducing fine sediment and stormwater runoff.

Objectives

1. Demonstrate the design, installation, and operation of at least two significantly different types of bioretention basins.
2. Test and report on the fine sediment removal performance of bioretention basins at the BMP scale and, if appropriate, at the catchment scale.
3. Characterize the stormwater retention and FSP removal performance using simple, low-cost monitoring techniques.
4. Advance understanding of bioretention basins and evaluate its potential to be more widely applied in the Tahoe Basin with regard to site selection, design, construction, operation, vegetation, and maintenance, pollutant control performance, costs, and other factors that might significantly affect BMP viability.

5. Understand homeowners' perceptions of bioretention basins and the factors that influence acceptance.

Progress in SFY 2013:

Year one monitoring data was presented to the TAG on February 22, 2013. First year results suggest greater than expected runoff volume reduction. NTCD staff started organizing and analyzing year two monitoring results. As of March 31, 2013, 8 snowmelt and 8 rainfall events had been sampled for year two monitoring. In May 2013 a water pour test (simulated rain event) and samples were collected at BMP 7, BMP 11 and the Harold Basin, and analyzed for turbidity, TSS and PSD.

Early revegetation challenges were resolved with spot repairs and reseeding. BMP 12 eco blocks were installed too low and the gravel was undersized; corrections were made to satisfaction of Washoe County. In 2013, evaluation of year two observations suggests increased infiltration believed to correspond with expansion of roots as vegetation grows.

NTCD and DRI performed a monitoring and field day on September 25, 2013. Infiltration rates of the BMPs were sampled through CHP and double ring infiltrometer tests. DRI collected 3 soil bulk density samples from each BMP. The team also performed flood tests on the BMPs and downloaded the in-situ pressure transducer data to determine the stage and subsurface draw down hydrograph in each BMP. NTCD also took pictures of the BMP sites, maintained the sites and checked on the irrigation systems. Washoe County has incorporated cleaning of the pretreatment sediment traps into its maintenance routine and is tracking performed activities via MaintSTAR tracking software. The county is scheduled to take over maintenance responsibilities in 2014.

NTCD staff is preparing the final project report, which is due February 2014. A presentation deliverable is scheduled for March 2014.

The Tahoe Regional Planning Agency selected and awarded NTCD's Hybrid BMP Retrofit project as the Best in Basin Erosion Control Project in March 2013.

Load reductions/outcomes/or ongoing:

Few significant runoff events occurred during the 2011/2012 water year (ending September 30, 2012). Preliminary results suggest nearly 100% of runoff from the project area catchment was infiltrated in year one. Load reduction estimates are expected with the Final Project Report.

Project title and Contractor:

Lake Tahoe Environmental Signage – Phase 2, DEP S 12-011, amendment 2

Tahoe Regional Planning Agency

Primary Contact:

Jeff Cowen
128 Market Street/PO Box 5310
Stateline, NV 89449
775-589-5278

Project Location:

Lake Tahoe Basin
8-Digit USGS HUC: Lake Tahoe 16050101

Project Summary:

Phase 2 entails sign fabrication and installation, media campaign, evaluation plan, and facilitation of maintenance plan implementation. The signage for Nevada's three gateway locations were designed, sites selected, and permits obtained during the initial phase of the project. California sign installation will be accomplished in the future as funding becomes available. Amendments to the contract were required, as delays and unexpected design and permitting costs demanded shifting funds in the budget and obtaining additional funding from 319 and match sources.

Start and Completion Dates:

March 17, 2011 – December 31, 2014 as amended

Fiscal Summary:

319(h) funds awarded	$72,980.00
Total amount of non-federal match funds	$48,596.44
Total Project Cost	$121,576.44

Total Grant Reimbursements through June 30, 2013:

$19,427.00

Project Partners:

Nevada Division of State Lands

Background:

The Lake Tahoe Environmental Signage Project will ensure that the public, particularly visitors to the Basin that Lake Tahoe enjoys special conservation status and signals environmental sensitivity. Additionally, the TRPA will increase public awareness via webpage recognition (ConservationClearly.org shown on sign) with information on resource stewardship and on the California and the

Proposed design of the Lake Tahoe gateway sign. Baseplate lists funders (State of Nevada, USEPA)

Nevada Lake Tahoe license plate programs which raise funds for research, conservation and restoration projects. TRPA has grant funds only to construct informational signs at the three highway passes accessing the east side of the Tahoe Basin from Nevada at this time. Four signs may be installed in a future phase in cooperation with California partner agencies contingent upon availability of funding. TRPA also will prepare a 20-year maintenance plan and recruit sign volunteers to implement the maintenance plan.

The sign has been designed, sites selected, and permits obtained. The Phase 2 scope of work involves sign fabrication and installation, media campaign, evaluation plan, and preparation of maintenance plan and recruitment of implementer of the maintenance plan. Sign fabrication and installation is scheduled for September and October 2013.

Project Description, Goals and Objectives:

Specifically, three signs will be constructed and installed at three Nevada gateway locations to the Lake Tahoe Basin. These are identified as Spooner Summit (Highway 50), Mt. Rose (State Route 431), and Daggett Pass (State Route 207).

The main goal of this project is to inform the public, particularly visitors to the Basin, about the special conservation status of the lake and the importance of stewardship and protection of the lake's watershed. The Lake Tahoe Environmental Signage Project will:

- Alert people entering the Tahoe Basin to the importance of environmental protection and natural resource stewardship;
- Encourage sign viewers to visit the TRPA website and the states' Lake Tahoe license plate grant program websites for information and stewardship actions; and,
- Bring widespread attention to the signage to increase recognition of the EIP, the License Plate programs, environmental restoration projects, and partnerships for stewardship of the Lake Tahoe Basin.

The web-based portion of the project and the media coverage arising from the proposed media campaign will:

- Increase knowledge of and support for the work of partner agencies and other partnerships;
- Raise awareness of the Environmental Protection Agency's designation of Lake Tahoe as an Outstanding National Resource Water;
- Bring recognition to the states' Lake Tahoe License Plate Programs and the TRPA EIP;
- Garner increased public support for restoration programs, which is necessary for continued funding.

Progress through SFY 2013:

TRPA solicited bids from potential contractors in Q3, 2012. The sole bid was too expensive. Cost cutting measures were identified and the budget revised and a second bid package released. RaPiD Construction is contracted to manage sign fabrication and installation. Additional grant funds were needed. The project budget was amended with additional funding from the Nevada Lake Tahoe License Plate grant program ($14,140) and from the 319 grant program ($36,000). The TRPA project team has used the ongoing public presentations in anticipation of the signs to solicit maintenance funding and possible sign adoption from appropriate organizations.

Progress on the project has been hampered by staff reductions. TRPA remains firmly committed to the project, including using internal resources, existing outreach activities and alternative innovative approaches to achieve the media campaign, evaluation plan, and maintenance plan agreement objectives.

Load reductions/outcomes/or ongoing:

This being an outreach and education project, load reductions are not estimated. The signs are expected to attract the attention of a large number of visitors and residents to the message and to more information available on the TRPA webpage concerning environmental protection and resource conservation with focus on water quality and watershed issues.

Project title and Contractor:

Integrated Residential BMP Strategy – Nevada Tahoe Basin, DEP-S 12-016

Nevada Tahoe Conservation District

Primary Contact:

Jason Brand
Nevada Tahoe Conservation District
PO Box 915
Zephyer Cove, NV 89448
775-586-1610 ext. 33

Project Location:

Lake Tahoe Basin
8-Digit USGS HUC: Lake Tahoe 16050101

Project Summary:

Lake Tahoe's water quality and clarity are threatened by inputs of sediment and nutrients from anthropogenic activities that generate nonpoint source (NPS) pollution. This project will minimize erosion and non-point source pollution by providing BMP education, training, and technical assistance to parcel owners that have not met the TRPA residential BMP retrofit requirements. Activities support implementation of Environmental Improvement Program (EIP) #16 and require coordination with other agencies. The project methods include: facilitate SFR BMP retrofit implementation through: a) technical services including site evaluation, plan preparation, technical installation guidance and final inspections and b) public outreach and education including BMP classes, training workshops, and exhibits.

Start and Completion Dates

January 2, 2012 to June 30, 2013

Fiscal Summary:

319(h) funds awarded	$200,000
Total amount of non-federal match funds	$200,000
Total Project Cost	$400,000

Total Grant Reimbursements through June 30, 2013:

$ 200,000 approximately

Project Partners:

University of Nevada Cooperative Extension
Tahoe Regional Planning Agency
USDA Natural Resources Conservation District
Tahoe Resource Conservation District

Background:

Implementation of BMPs to control and treat runoff at the parcel level is an important pollutant opportunity identified for the Lake Tahoe TMDL implementation plan.

In 1992, TRPA created the BMP Retrofit Program, which requires the installation and practice of BMPs on developed parcels in order to infiltrate the 20-year, one-hour storm event. In 1993, TRPA assembled the EIP #16 Interagency Working Group to: 1) facilitate the implementation of BMPs on all developed parcels; 2) conduct community outreach and education on the importance of private BMPs to water quality; and, 3) provide technical assistance to property owners to implement BMPs. The working group is comprised of the TRPA Stormwater Management Team, Tahoe Resource Conservation District (TRCD), Nevada Tahoe Conservation District (NTCD), University of Nevada Cooperative Extension (UNCE), and USDA-Natural Resources Conservation Service (NRCS). In November 2002, a Memorandum of Understanding (MOU) was adopted by TRPA, NTCD, TRCD, and NRCS which specified TRPA as the lead agency to complete commercial, industrial, public service and multi-family residential BMP evaluations and implementations. The NRCS, TRCD, and NTCD were designated as the lead agencies for single-family residential (SFR) BMP site evaluations and implementations.

Table 1 below shows remaining effort to satisfy the BMP retrofit requirements. Progress has been significant, but more than half of the SFR parcels still must meet BMP requirements. Activities are focused in areas identified to have the greatest impact on water quality.

A constraint to installation of BMPs is local conditions that limit infiltration of stormwater (e.g., groundwater or bedrock near the soil surface). Area Wide pilot projects were initiated by TRPA as an alternative way to achieve BMP implementation in constrained areas. One of two Area Wide pilot projects is underway at the Cave Rock GID. Opportunities have been identified to integrate private runoff with public stormwater conveyance and an existing bed filter and to obtain support of property owners and the GID board to cover a portion of capital and long term maintenance costs. NTCD staff provides technical support to develop plans for the project.

Table 1. TRPA BMP Retrofit Ordinance Compliance Status for Existing Developed SFR Parcels in Nevada Lake Tahoe, March 2011

Total SFR Parcels	Count of Parcels with BMP Certificate*	Count of Parcels without BMP Certification^
5784	2534 (44%)	3250 (56%)

* Total count of parcels with BMP Certificate includes 188 Source Certificates

^ Without certificate parcel count is based on issued Certificates of Compliance; some parcels may be in the process of implementing BMPs or applying for Certificates.

Source: Tahoe Regional Planning Agency, Stormwater Management Program, March 2011

The SFR BMP Retrofit program as implemented by NTCD has been effective and reliable. Its continuation is important; however, current budget trends suggest significant funding reductions loom that may significantly impact the BMP Retrofit Program. In light of this situation, the NTCD will prepare a draft plan to implement a "fee for service" in the event that future funding for the program becomes unavailable.

Project Description, Goals and Objectives:

This project proposes to minimize erosion and nonpoint source pollution in Nevada Lake Tahoe by providing education, training, and technical assistance to single family residential (SFR) parcel owners regarding BMP implementation and the importance this has on reducing nonpoint source pollutants. The project includes two integrated components: 1) facilitation of BMP implementation on SFR parcels within Lake Tahoe, Nevada, including Area Wide BMP Retrofit pilot projects; and, 2) public education and outreach on BMP installation and maintenance and the BCP.

The overlying goal is to provide SFR parcel owners of Nevada Lake Tahoe with BMP implementation assistance. Proposed activities will directly support the Environmental Improvement Program #16, which is administered by the TRPA. Through this assistance there will continue to be an increase in the number of parcels that are complying with TRPA's BMP requirements for implementation of BMPs on single family residential parcels.

Facilitating Private Parcel BMP Implementations

TRPA's BMP Retrofit Ordinance aims to control clarity-reducing pollutants at the source. The owners of all developed parcels are required to contain and infiltrate the volume of runoff produced by the 20 year-1 hour storm event (approximately 1"). NTCD is the lead agency facilitating BMP implementations for SFR parcels within Nevada Lake Tahoe. NTCD will coordinate with TRPA to facilitate BMP implementations on priority Nevada Lake Tahoe SFR parcels to bring them into compliance with the Ordinance. Additionally, NTCD will provide technical assistance to TRPA for the Area Wide BMP Retrofit pilot projects within Cave Rock GID and Oliver Park GID.

Backyard Conservation Program

The Backyard Conservation Program (BCP) is a national program created by NRCS, the National Association of Conservation Districts (NACD), and the Wildlife Habitat Council (WHC), that focuses on implementing conservation strategies within urban residential communities. The national BCP offers a holistic approach to NPS pollution through the accomplishment of technical assistance and conservation planning which goes beyond stormwater runoff control and addresses conservation practices that complement NPS control. NTCD has worked closely with NRCS to tailor the national BCP to meet the needs of Lake Tahoe. NTCD will integrate BCP elements in conjunction and complementary with the BMP Site Evaluation & Implementation process to develop a Conservation Plan for each parcel where requested or warranted by conditions. A Conservation Plan adds more details on other conservation practices for invasive weed removal, water conservation, fertilizer management, wildlife habitat improvements, and defensible space.

Coordinated Outreach and Education Efforts

In order to carry out the main components of this proposal, NTCD will continue coordinating with partner agencies to conduct public outreach. This includes participation in the EIP #16 Working Group to develop and distribute information to property owners of ordinance requirements, the BMP certification process, NPS control, and other conservation issues. NTCD will work with partner agencies to design and manage the North Lake Tahoe Demonstration Garden at the Sierra Nevada College and to execute the annual Lake Tahoe BMP Workshop and refresher workshop, which educates a variety of professionals including contractors, architects, engineers, and landscapers about BMPs and their proper installation. The UNCE

leads the organization and facilitation of the workshop and training.

Developing Fee for Service Plan

Current projections suggest 2012 Nevada 319(h) grant funds will be reduced. Other federal and state grant programs are slated for reductions. These economic conditions may significantly impact the BMP Retrofit Program. By preparing a draft plan to implement a "fee for service" financing mechanism, the NTCD will have that financing alternative available should federal or state grant fund reductions impact operation of the SFR BMP Retrofit program.

Progress in SFY 2013:

This project was completed in June 2013. The final project report has been received.

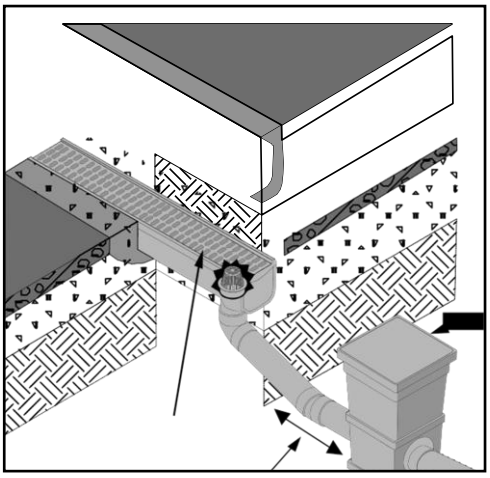
SFR BMP Retrofits – NTCD completed 60 site evaluation plans, 105 final inspections, and 166 technical assists.

Site Evaluations: NTCD continued working with NRCS engineer to review 10% of BMP site evaluation plans and designs done by NTCD. A review of NTCD's site evaluations was conducted in September of 2012. NTCD received positive feedback from the NRCS.

Contractor Evaluations and Installations – Several properties were visited this period with minor recommendations made. NTCD, NRCS and TRCD make notes on poor BMP installations to determine if there are contractors that are conducting work that is not up to recommended standards. The NTCD has worked with these contractors to explain corrections and inform them how their BMP installations will inspected and what they need to correct any failures. NTCD also continued with TRPA to conduct annual windshield survey of NTCD approved final BMP installation inspections resulting in BMP certification recommendation.

Coordination – The NTCD attended 4 Steering Group meetings to stay consistent with current protocol, combine outreach efforts, and insure there is a clear consistent message being delivered to the public about BMPs. Attended EIP 16 Technical Team meetings to work on creation and review of the materials and resources to explain proper installation of BMPs such as sediment traps and methods of cleaning the systems. NTCD awaits the NRCS recommendations to be finalized. In response to maintenance letters, NTCD did field calls that were focused on the need and technique for BMP maintenance.

Driveway Runoff Conveyance System



Conveyance structures (i.e. slotted channel drains, swales) installed roughly perpendicular to the flow path, intercept and divert runoff to an infiltration system or vegetated area so it cannot flow into the street storm drain system. These structures should usually be placed at or as near to the property line as possible to maximize the amount of runoff that is intercepted and infiltrated. Except when approved by the local jurisdiction, conveyance structures are not allowed in public rights-of-way nor should they direct water into public rights-of-way.
Courtesy of NRCS, NTCD and TRCD

Public Outreach and Education – NTCD staff participated in the Contractors BMP Workshops in April 2013; assisted UNCE in the development and installation of a new BMP exhibit at the North Lake Tahoe BMP demonstration garden and participated in 4 Green Thumb and 2 other educational events; and coordinated with TRPA to develop and send out in April information and recommendations for P-free fertilizers use to residential parcel owners.

Fee for Service Funding Mechanism – NTCD submitted the final draft Fee for Service Funding Implementation Plan.

Area Wide Project Pilot Project – NTCD engineering staff completed an operational feasibility assessment of the Cave Rock Estates GID bed filter BMP, performed pollutant load modeling, and submitted a Technical Memo with an evaluation of load reduction potential with conceptual treatment alternatives using Pollutant Load Reduction Model (PLRM).

<u>Load reductions for 2013:</u>
Using the Pollutant Load by Land Use spreadsheet specific to the Lake Tahoe Watershed, the estimated load reductions were: TSS 975 tons/year; TN 32 tons/year; TP 10 tons/year.

Project title and Contractor:

Training Contractors and Workers in BMP Installation at Lake Tahoe, DEP-S 11-023

University of Nevada Cooperative Extension

Primary Contact:

John Cobourn
University of Nevada Cooperative Extension
Box 3912
Incline Village, Nevada 89450
775-832-4144

Project Location:

Lake Tahoe Basin
8-Digit USGS HUC: Lake Tahoe 16050101

Project Summary:

Best Management Practices (BMPs) must be installed on developed property to control nonpoint source pollution that contributes to the forty year decline of Lake Tahoe water clarity. The project continues the efforts of UNCE in concert with BMP Retrofit Partners to train contractors and workers on the installation and maintenance of BMPs according to requirements of the Tahoe Regional Planning Agency. Since 2000, the Contractors BMP Workshops and BMP Refresher Courses have been conducted annually. Total annual attendance exceeds 130. BMP training offered in Spanish began in 2007. The staff of the Incline Village office of the University of Nevada Cooperative Extension leads preparation and implementation of the BMP workshops.

Project methods include facilitation of BMP implementation through BMP installation training for contractors and agency staff, updating training materials, and designs and installation of a new demonstration garden exhibit.

Start and Completion Dates

August 1, 2011 – September 30, 2013

Fiscal Summary:

319(h) funds awarded	$35,000
Total amount of non-federal match funds	$35,000
Total Project Cost	$70,000

Total Grant Reimbursements through June 30, 2012:

$4,787.40

Project Partners:

Tahoe Regional Planning Agency
Nevada Tahoe Conservation District
USDA Natural Resources Conservation District

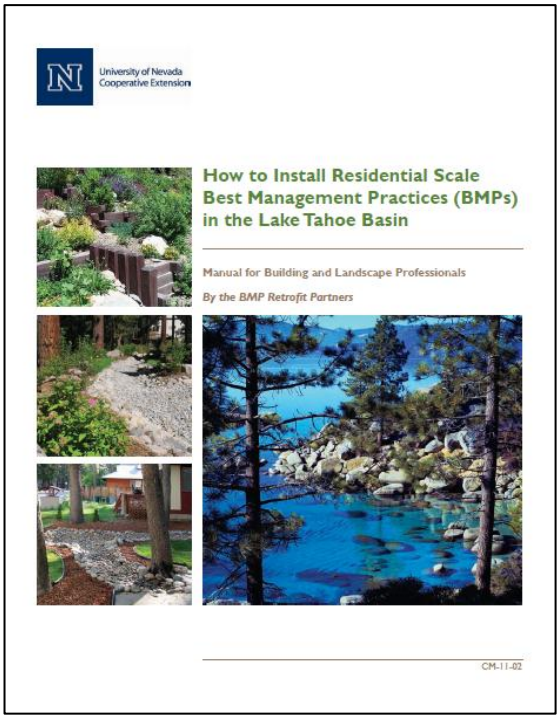
Tahoe Resource Conservation District
North Lake Tahoe Demonstration Garden

Background:

Due to its amazing clarity, Lake Tahoe has been designated an Outstanding National Resource Water. This is a Clean Water Act designation that affords the strictest anti-degradation standards and water quailty protections. However, measurements show that since 1968 the clarity of Lake Tahoe has been declining at the alarming rate of nearly one foot per year. The pollutant source analysis conducted for the Lake Tahoe Total Maximum Daily Load (TMDL) has determined stormwater runoff from urban land uses is the primary source of the fine sediment (particles smaller than 16 microns) and phosphorous loads contributing to the declining clarity (TMDL Technical Report 2007).

Basin-wide implementation of Best Management Practices (BMPs) on developed parcels is identified in the TRPA Ordnances, the Environmental Improvement Program (EIP), and the Lake Tahoe Total Maximum Daily Load (TMDl) as an effective action to reduce nonpoint source pollutant loadings to the Lake. In 1992, TRPA created the BMP Retrofit Program, which requires the implementation of BMPs on developed land. The BMPs generally consist of structures and practices used to reduce nonpoint source pollution and stormwater runoff. The BMP Retrofit Program is an essential toward achieving long-term water quality improvements on developed parcels and represents the private sector contribution to the basin-wide Environmental Improvement Program (EIP) for water quality improvements on public land.

UNCE founded the Contractors BMP Workshop in the year 2000. The Strategic Plan of the EIP 16 Working Group states in Appendix B, "Partner Roles," that it is the role of UNCE to "organize, advertise and facilitate trainings on BMPs and water quality for Contractors and other specific audiences." For 12 years, the UNCE has led preparation and implementation of annual BMP Contractors Workshops. Workshop preparation and implementation involves coordination with knowledgeable staff from the TRPA, NTCD, NRCS, and TRCD, collectively called the BMP Retrofit Parters. The BMP Retrofit Partners periodically meet to evaluate and improve our collective ability to assist property owners to install and maintain BMPs, and to address technical, policy, program management, and outreach and education matters regarding BMP Retrofits. We have developed good collaborative relationships on these trainings and other BMP Retrofit projects. The workshops are conducted to train primarily contractors and contractors' workers, but property owners also have attended.



UNCE administers an "Experience Survey" for the contractors, to determine if their completion of the workshop is leading to a greater number of actual installations of BMPs. The survey compares the amount of BMP installation work done by firms who have attended the workshops before with that done by firms who have not attended before. Results from prior years

indicate that firms that have attended the BMP workshops, on average, installed three or four times as many BMP projects as firms that have not attended our Workshops before. This indicates that the workshops are increasing the numbers of BMP retrofits installed by trained contractors each year. The survey will be conducted again to follow up on the 2012 and the 2013 workshops.

UNCE has also been a contributor to the development of the North Lake Tahoe Demonstration Garden for 20 years. Since about 2004, Extension, in cooperation with NTCD, has assisted the Board of Directors in designing and installing 8 exhibits of BMPs complete with interpretive signs. The Contractors Basic BMP Workshop was held in the Garden in 2011, and the evaluation survey shows that participants found the exhibits to be excellent teaching tools. UNCE will create a User Survey to leave in the Garden Gazebo to gain information about how garden users regard the exhibits and whether they are gaining and using information there about implementing BMPs. These surveys can be filled out by participants in Green Thumb Thursday classes and by visitors.

Project Description, Goals and Objectives:

Goal: Continue to train contractors and workers in the proper installation of residential scale BMPs to meet requirements of the Tahoe Regional Planning Agency (TRPA) and provide an additional BMP learning opportunity at the North Lake Tahoe BMP Demonstration Garden.

Objectives:

1.Prepare and update training materials and organize and conduct the following BMP workshops in 2012 and 2013:

- Basic Contractors BMP Workshop: Train contractors and workers in the proper installation and maintenance of residential scale BMPs in accordance with requirements of the TRPA Ordinances;
- Refresher BMP Workshop: Provide review and updates on BMP Installation and maintenance for contractors who have already passed the Basic Contractors Workshop; and,
- BMP Installation Workshop - Spanish language: Train Spanish speaking contractors and workers in the proper installation of BMPs in accordance with requirements of the TRPA Ordinances.

2. Lead the design and installation of a new BMP exhibit at the North Lake Tahoe BMP Demonstration Garden and detailed interpretive signage in 2012

Progress in SFY 13:

Attendance at the Basic Workshop was 68 people (51 paying participants). The Refresher was attended by 60 (51 paying participants). Only 4 attended Spanish language workshop, which renders this subtask not sustainable. Attendance over 5 years is shown below.

	Basic			Refresher	
Year	Paying Workshop Participants	Vendors	Agency Staff & Speakers	Paying Workshop Participants	Agency Staff & Speakers
2013	**51**	**3**	**14**	**51**	**9**
2012	61	4	24	45	15
2011	78	3	24	34	14
2010	49	2	27	44	12
2009	76	4	27	44	16

The pre- and post- tests showed solid knowledge gains, as indicated by the values in the table below. Pre Test and Post Test Results ("Passing" is a test score of 70% or better)

2013	Basic		Refresher
	Pre-test	Post-Test	Post-Test
Average Score	53.6%	83.9%	85.1%
# who took test	36	37	46
# who passed test	9	33	42
% who passed test	25%	89.1%	91.3%

An experience survey was conducted. Contractor firms who had attended the 2013 workshop before completed an average of 9.4 BMP installations in 2012 (n = 23). Those who did not attend before completed an average of only 1 installation last year (n = 4). Contractor firms who had attended the 2012 workshop before completed an average of 7.71 BMP installations in 2011 (n = 21). Those who did not attend prior to 2012 completed an average of only 3.33 installations in 2011 (n = 6).

UNCE also led the design and construction of a new BMP groundcover exhibit at the North Lake Tahoe BMP Demonstration garden (photo, right), assisted by NTCD staff. UNCE conducted a visitor survey at the NLT BMP Garden. Preliminary results are limited - of nine respondents, 60% stated that the BMP Exhibits added to their knowledge of erosion control plant species names, groundcover species names, slope stabilization techniques, roof runoff infiltration, fire defensible space and invasive weeds

Load reductions/outcomes/or ongoing:

A reasonable expectation is that increasing and sustaining a set of in-basin trained BMP contractors for residential land uses will contribute to improved design and installation done more effectively and efficiently; likely reducing the number of per parcel final inspections and technical assists.

Project title and Contractor:

Public/private TMDL implementation through BMP installation and maintenance, areawide treatment, and phosphorus source control, DEP-S 12-015

Tahoe Regional Planning Agency

Primary Contact:

Louis Cariola
Tahoe Regional Planning Agency
128 Market Street/PO Box 5310
Stateline, NV 89449
775-589-5318

Project Location:

Lake Tahoe Basin
8-Digit USGS HUC: Lake Tahoe 16050101

Project Summary:

In an effort to implement the Lake Tahoe TMDL and protect and restore Lake Tahoe's clarity, this project will fund the TRPA Stormwater Management Program (SMP) to reduce non-point source inputs of fine sediment and nutrients to Lake Tahoe. Through this project, the SMP will provide BMP technical guidance and facilitate public and private BMP planning, design, permitting, installation, and maintenance. Priority areas will be targeted for compliance to accelerate implementation of BMPs and SMP staff will improve quality and consistency of jurisdictional and agency partner BMP review and inspection. Area-wide treatment opportunities in two areas will be furthered and if feasible, the SMP will work with GID staff to develop one pilot in-lieu fee cooperative agreement. Through education and outreach, the SMP will inform property owners about BMP maintenance and will ensure BMPs remain functional over time. The SMP will also educate property owners, fertilizer retailers and fertilizer users about phosphorus source control and will assist with the annual Contractors Workshop.

Start and Completion Dates:

March 2012 – June 2013

Fiscal Summary:

319(h) funds awarded	$247,316.43
Total amount of non-federal match funds	$247,317.00
Total Project Cost	$494,633.43

Note: cash match source is private BMP expenditures

Total Grant Reimbursements through June 30, 2013:

$72,361

Project Partners:
University of Nevada Cooperative Extension
USDA Natural Resources Conservation Service
Nevada Tahoe Conservation District

Background:
Lake Tahoe is federally designated as an Outstanding National Resource Water due to its exceptional clarity. However, increased pollutant loading from urban development in Tahoe's watershed has led to an alarming rate of clarity decline since the 1960's. Development and adoption of the Lake Tahoe Total Daily Maximum Load (TMDL) by the Nevada Division of Environmental Protection (NDEP) demonstrates Nevada's commitment to reduce pollutant loads to Lake Tahoe. The Lake Tahoe TMDL recognizes stormwater runoff from urban uplands to be the primary source of fine sediment (<16microns) and nutrients contributing to clarity decline (TMDL Technical Report, 2007) and identifies implementation of Best Management Practices (BMPs) on urban uplands as a key strategy to restore Lake Tahoe's clarity. BMP implementation is also recognized by the Lake Tahoe Watershed Assessment, which states that "restoration of existing erosion problems" and "treatment of urban surface flow" were two of the "most appropriate courses of action" to stop the decline in Lake Tahoe's clarity (USDA Forest Service et. al, 2000, p. 306).

TRPA requires all developed properties in the region to mitigate impacts of their development by installing and maintaining permanent Best Management Practices (BMPs) for sediment source control and to capture and infiltrate the 20-year, one-hour storm event. The potential for success in water quality improvement is enormous when considering the cumulative effect of treating and controlling stormwater runoff from 30,000 developed properties and the combined impervious surface areas associated with these properties. TRPA's Stormwater Management Program implements the Best Management Practices Requirements in Chapter 60, TRPA Code of Ordinances, and represents the private sector contribution to the Environmental Improvement Program (EIP). Since its inception in 1998, this program has focused heavily on public education and outreach and continues to provide free technical assistance, informational materials, and permitting to property owners in order to facilitate voluntary BMP implementation. Since 2007, the TRPA Stormwater Management Program has taken the "accelerated implementation" approach to increase the rate of BMP Compliance.

Accelerated Implementation
The limited success of voluntary basin-wide compliance and conclusion of all private parcel BMP installation priority watershed deadlines in October of 2008 necessitated development of a new approach to accelerate targeted BMP installation. In order to increase BMP Compliance rates, TRPA developed an Accelerated BMP Implementation Program in 2007 and has enhanced and expanded this program significantly over the past three years. This program directs compliance efforts and accelerates BMP implementation in areas with the greatest water quality benefit. These areas include catchments with large amounts of impervious area (particularly directly connected impervious area); areas where an EIP water quality improvement project has previously been or is currently being implemented; and/or areas where opportunities for area-wide water quality projects that integrate private and public BMPs may be explored.

Project Description, Goals and Objectives:

The goal of this project is to implement the Lake Tahoe TMDL and protect and restore Lake Tahoe's clarity by reducing non-point source inputs of fine sediment and nutrients to Lake Tahoe. Implementation of Best Management Practices (BMPs) on urban uplands and BMP maintenance make up a key strategy to gaining and sustaining pollutant load reductions. Chapter 60 of TRPA's Code of Ordinances requires all developed properties in the Region become BMP Certified by implementing BMPs and keeping them functionally maintained in perpetuity. For constrained properties where on-site infiltration is not possible, public/private or area-wide treatment alternatives must be developed and implemented. To reduce nutrient loadings to Lake Tahoe, education and outreach on phosphorus source control will focus on reducing phosphorus fertilizer use in the Region.

Specific project objectives include SMP facilitation of private parcel BMP planning, design, permitting, implementation, and maintenance - often through targeted compliance to accelerate implementation; improving quality and consistency of jurisdictional and agency partner BMP review and inspection; educating Tahoe property owners on BMP maintenance and function; education and outreach on phosphorus source control and fertilizer options; and providing BMP technical information at the contractor's workshop.

Through this project, the SMP will perform the following tasks:

1) BMP Implementation and Certification

Continue to facilitate BMP installation for Nevada Tahoe properties under voluntary compliance and those targeted for accelerated BMP implementation and target new areas as needed to help bring remaining commercial and multi-family parcels into compliance.

2) Public/Private Area-Wide Treatment Opportunities

Advance area-wide treatment opportunities to achieve greater water quality benefits in two constrained Nevada locations.

3) Phosphorus Source Control

Through education and outreach, advance property owners' understanding on phosphorous free fertilizer for lawn and reduce phosphorus fertilizer use in the Lake Tahoe Region.

4) Partner Group Coordination and Consistency

Attend at a maximum quarterly EIP #16 Working Group meetings, provide training to Washoe County and TRPA planning and inspection staff to achieve consistent BMP design and quality installation. Conduct annual QA/QC between TRPA and NTCD.

5) Contractors Workshop

Enhance Lake Tahoe contractors' understanding of BMP technical information and fertilizer use by partnering with UNCE, NRCS and NTCD to develop content and present at the annual BMP Contractor's Workshop.

6) BMP Inspection and Maintenance

Develop and produce an instructional BMP maintenance video in coordination with NTCD, UNCE, and NRCS. Educate property owners certified for more than five years on BMP maintenance requirements and ensure BMP maintenance occurs on commercial/industrial and multi-family properties.

7) BMP Handbook

Print a small number of hard copies of the Final BMP Handbook.

8) Project Management, Administration, and Reporting

Ensure NDEP 319 grant contract provisions are followed, deliverables of professional grade quality are completed on time, and progress reports are submitted on time.

Progress in SFY 13:

BMP/Accelerated Implementation – Notice of failure letters were sent to owners of 37 single family residential (SFR) parcels, 42 multifamily residential (MFR) parcels, and 6 commercial parcels. Parcels brought into compliance through the accelerated implementation process include 129 SFR, 6 MFR and 6 commercial. Final Certificates were issued to 126 SFR parcels, 86 MFR parcels, and 9 commercial parcels. Certificates are issued after TRPA or NTCD performs final inspections.

Area Wide Treatment pilot projects – No work was done on the Oliver Park GID project. For the Cave Rock Estates (CRE) GID project, TRPA staff reviewed the PLRM model development results, modeling results from NTCD and provided comments. TRPA supports retrofitting the treatment basin to treat the CRE GID roads as well as the private runoff that is currently directly connected to the roads. On June 25th there was a Conceptual Design TAC meeting. Meghan Kelly with NTCD designed preliminary plans to rebuild the bed filter so it will improve treatment function for fine sediment particles. The TAC is going to comment on the plans and NTCD will move forward with developing 30% design plans. Construction is planned for 2014. Comments on the preliminary plans were provided to NTCD and they were given the go-ahead to move forward with the monitoring. Monitoring by NTCD was performed, and reported to TRPA, which reviewed and accepted the results as input supporting the conceptual design of the filter bed.

Phosphorus Source Control -- A Phosphorus-free fertilizer card was designed and will be printed. SMP staff attended a Tahoe Fertilizer Working Group meeting with members of TRCD, NTCD, University of California Master Gardeners, and University of Nevada Reno Cooperative Extension, Lahontan, and Resource Concepts consultant staff. Action items included creation of an anthology of all fertilizer outreach materials currently distributed in the Tahoe Basin, a draft matrix of Agency Roles and Resources for fertilizer use. TRPA staff presented at the Glenbrook HOA Community Meeting on the effect nutrient loading, phosphorous in particular, has on lake clarity. The benefits of organic fertilizers, how to choose phosphorus-free fertilizers, and guidelines for fertilizer use was displayed during an exhibition-style session. A public question and answer period was held, and pertinent literature was handed out. In January the fertilizer and irrigation working group met, concluded that soil conditions are site specific, and decided to implement a pilot soil testing project in Incline Village, Nevada. Soil testing kits were researched for feasibility in testing phosphorus, potassium and ph. It was determined that this type test could be done for $9.00 each. In April a working group meeting was held. Advertisements were run in the North Tahoe Bonanza (5/23), Tahoe Daily Tribune (5/24) and the Sierra Sun (5/25). The fertilizer webpage was updated on the Tahoe BMP website (see http://www.tahoebmp.org/Fertilizer.aspx)

Retail (P-Free) Fertilizer Sales and Distribution -- Phosphorus free fertilizer card was designed and will be printed in July. A letter has also been drafted to send to retailers.

Partner Coordination and Consistency – A number of meetings were attended to discuss BMP program implementation matters and the drafting of a private BMP Strategic Plan and associated BMP Partners MOU incorporating updates to the TRPA Regional Plan and the TMDL implementation plan. Planning for deployment of the online BMP Design tool continued. TRPA staff performed the annual quality

assurance/quality control (QA/QC) in November 2012. Ten % of final inspections performed by NTCD within the previous year are field-reviewed to ensure consistency between the two agencies. TRPA performs the inspections in the form of a "windshield evaluation" (evaluate BMPs from the road). TRPA determined that all 11 of the inspected properties passed. For professional development, SMP staff attended four pertinent webinars broadcasts by the Center for Watershed Protection. SMP staff continued to interact with counties and NDOT on the planning, design, permitting and implementation of five water quality improvement projects.

Contractors BMP Workshops – In April 2013, three SMP staff participated in the Basic and the Refresher BMP training workshops as trainers or presenters. Prior to the workshops, TRPA staff attended a number of meetings to coordinate with UNCE and other partners on workshop planning and content review/revision.

BMP Inspection and Maintenance -- A list of BMP maintenance video topics was refined and outlines for 3 videos were drafted with participation from NTCD, NRCS and UNCE. Commercial and multi-family parcels were identified and researched for receiving maintenance letters. Database tracking protocol is being refined and an initial batch of letters will be sent in July. Sent BMP Maintenance mailers to 3,356 Washoe and

Douglas County multi-family properties. SMP staff worked at developing an Access database to record responses from the maintenance letters sent out. This data will eventually be merged with TRPA's private BMP database.

Project Management, Administration, and Reporting – satisfactory. TRPA BMP Retrofit program was awarded a 319(h) grant October 2012. The existing work plan will be melded into the new work plan and remaining funds carried forward. A new work plan is under development. TRPA SMP staff has experienced significant cut backs and personnel changes in the past two years. Despite the changes, the BMP Retrofit program core tasks are solid and headway is being made into new tasks to streamline SFR BMP retrofit program effort and to address private BMP maintenance and area wide projects in infiltration constrained locations.

Load reductions SFY 2013:

ESTIMATED TOTAL POLLUTANT LOAD REDUCED BY BMP RETROFIT PROGRAM (SFY 2013)			
Land Use	**Total Load Reduced Through BMP Implementation by Land Use (tons/year)**		
	TSS	**TN**	**TP**
Single Family Residential	1169	39	12
Multi-Family Residential	1196	24	6
Commercial/Industrial	1426	16	4
TOTAL	3792	79	22

Project title and Contractor:

Washoe County Tahoe Basin High Efficiency Sweeper – DEP-S 13-011

Washoe County Community Services Department

Primary Contact:

Kimble O. Corbridge
Washoe County Community Services Department
PO Box 11130
Reno, Nevada 89520-0027
775-328-2054

Project Location:

Lake Tahoe Basin
8-Digit USGS HUC: Lake Tahoe 16050101

Project Summary:

With this funding contract, Washoe County will purchase a high efficiency street sweeper for use on county maintained roads and pedestrian paths within the Lake Tahoe Basin. A high efficiency street sweeper is a mobile BMP (best management practice) which Washoe County continues to use to remove sediment and other pollutants accumulated on roads and major pedestrian paths. The effect is to reduce loadings of pollutants of concern in stormwater runoff and improve the clarity of Lake Tahoe.

Start and Completion Dates:

December 2012 – June 2017

Fiscal Summary:

Total Project Cost: $ 469,414.76
Section 319(h) Funds: $ 200,000.00
Non-Federal Match: $ 269,414.76

Total Grant Reimbursements through June 30, 2013:

$19,427.00

Project Partners:

none

Background:

As noted in the Final Lake Tahoe Total Maximum Daily Load (Tahoe TMDL) Report, approved by EPA August 2011, urban uplands contribute 72 % of the fine sediment particles (FSP) and 47% of the total phosphorus that enters Lake Tahoe as nonpoint source pollution and impairs the transparency of Lake Tahoe. The Clarity Challenge, 20-year interim transparency restoration goal of the Tahoe TMDL, requires measurable reductions in FSP (34%) and phosphorus (21%) loads to Lake Tahoe over the next 15 years. Urban stormwater runoff carries these pollutants mainly in pipes and ditches directly into Lake Tahoe and the streams entering Lake Tahoe. Streams in Washoe County that route urban stormwater runoff directly

to Lake Tahoe include Mill, Incline, Third, Wood, Burnt Cedar and Second Creeks.

Several recently completed studies support the removal of sediment from paved surfaces which are directly connected to a waterbody as an effective method to reduce FSP and phosphorus loads in that waterbody. Studies have demonstrated that high efficiency street sweepers are a cost-effective means to recover FSP and larger particles before they breakdown to smaller particles. An ancillary affect is the reduction of phosphorus which adheres to the particles' surfaces. One study, Road Rapid Assessment Methodology (Road RAM) Technical Document, Tahoe Basin (2NDNATURE, Northwest Hydraulic Consultants, and Environmental Incentives, Final Report November 2010), presents fine sediment particles (FSP) and total suspended sediment (TSS) event mean concentration (EMC) data collected from comparable road sites throughout the Lake Tahoe Basin. Figures 6.5 and 6.6 from the final report show, in addition to minimizing the amount of road abrasive applied, Washoe County used one dustless sweeper and had a more rigorous street sweeping program during the data collection period than other jurisdictions. These graphics show the difference in FSP reduction on Washoe County roads compared to other jurisdictions with a rigorous street sweeping program combined with a strategic approach to minimizing application of road abrasives. An additional sweeper with enhanced ability to pick up < 16 micron particles would increase removal of FSP and phosphorus from the roadways, and thereby reduce pollutant loads entrained by urban stormwater runoff draining from Washoe County streets and major pedestrian paths into Lake Tahoe.

Project Description, Goals and Objectives:

Washoe County, project contractor, will purchase a new high efficiency vacuum-assisted street sweeper. The sweeper will be PM-10 compliant; sized for pedestrian paths and narrow streets and will be used to sweep County maintained roads and pedestrian paths within the Lake Tahoe Basin.

Washoe County will be responsible for and perform all tasks. The project involves increasing the efficiency of the County's existing street and pedestrian path sweeping program in the Lake Tahoe Basin. Public awareness of the project will be accomplished through project related staff reports/agenda items submitted to the Washoe County Board of Commissioners and a written summary of the project submitted to the Incline Village/Crystal Bay Citizens Advisory Board (CAB) or their replacement. (CABs are in the process of being replaced with another outreach mechanism.)

Sweeper operation and maintenance information will be collected and reported. The information will be used to characterize costs and benefits of the new sweeper and to assist with decisions on adjusting the sweeping protocols and road operation strategies to optimize pollutant load reductions and future credit declarations.

The project goals and objectives are:

Goals

- Improve the clarity of Lake Tahoe by reducing pollutants of concern in urban stormwater runoff washed off Washoe County roadways and reaching Lake Tahoe and tributaries.
- Purchase a new high efficiency sweeper and operate it as a mobile BMP on Washoe County maintained streets and major pedestrian paths in the Lake Tahoe Basin.

Objectives

- Increase the frequency and miles of sweeping Washoe County roads and major pedestrian paths with the addition of the new high efficiency vacuum-assisted sweeper
- Operate and maintain the new sweeper according to County protocols and make appropriate protocol adjustments to optimize reduction of FSP in urban stormwater runoff to Lake Tahoe.
- Efficiently document and report the increased sweeping efforts and corresponding pollutant load reductions for the project and the Lake Clarity Crediting Program (to obtain Lake Clarity Credits for Washoe County).

Progress through SFY 2013:

In April 2013, prepared specifications and bid documents for sweeper bid. Coordinated draft review and revisions with NDEP. In May 2013, the bid package was published. In June 2013, one qualified bid within the budget was received from Tennant. Sweeper operation protocols are under development.

Load reductions/outcomes/or ongoing:

Annual and cumulative amounts of the amount of material swept will be collected. We are investigating methods to correlate material volume swept to stormwater pollutant load reductions for total suspended solids, fine sediment, total nitrogen, and total phosphorus.

Project title and Contractor:

Evaluation of Fine Sediment Removal Performance and Maintenance Requirements for Media Filtration Stormwater Treatment Vaults

Desert Research Institute

Primary Contact:

Alan Heyvaert, Associate Research Professor
2215 Raggio Parkway
Reno, NV 89512
alan.heyvaert@dri.edu
Ph: (775) 673-7322

Project Location:

Lake Tahoe Basin
8-Digit USGS HUC: Lake Tahoe 16050101

Project Summary:

This project is designed to conduct a comparative performance evaluation of fine sediment removal efficiency by two different types of commercial stormwater treatment vaults deployed at a highway site in the Lake Tahoe Basin. Fine sediment particle (FSP) have been identified as a primary pollutant to Lake Tahoe, and highway runoff has been identified as one of the largest contributors of FSP to the lake. Water quality monitoring and sampling will be conducted to establish turbidity and FSP concentration relationships for performance evaluation of FSP removal efficiency by each media treatment vault.

Start and Completion Dates:

Winter 2013 to Winter 2014

Fiscal Summary:

Total Project Cost:	$ 167,201
NDEP 319(h):	$ 78,065
NDOT (NDSL):	$ 57,000
DRI:	$ 32,137

Total Grant Reimbursements through June 30, 2013:

$58,493

Project Partners:

Nevada Department of Transportation (NDOT)
Nevada Division of State Lands (NDSL)
Tahoe Resource Conservation District (TRCD

Background and Project Description:

EPA recently approved the Lake Tahoe Total Maximum Daily Load (TMDL) which compels Tahoe urban stormwater jurisdictions such as NDOT to reduce the amount of clarity reducing pollutants, particularly

fine sediment, from the roadways they own and operate within the Lake Tahoe basin. The TMDL analysis indicates that achieving the water clarity goals is possible, but calls for the implementation of innovative and advanced stormwater runoff treatment and control technologies in order to do so. The Lake Tahoe Basin also faces a unique problem, that of the fine sediment particles less than 16 microns in diameter (FSP) which will undoubtedly be more difficult and costly to treat and control than total suspended sediments (TSS).

Fine particle removal from stormwater runoff is particularly difficult using standard practices, such as detention basins. Media treatment, filtration and infiltration are promising approaches that have not been proven in field trials, although Caltrans is exploring this approach and laboratory studies have shown promise (Caltrans 2006, Bachand et al. 2005). An improved understanding of fine particle removal is warranted, particularly at the project scale, to better inform load reduction planning and BMP siting, design, operation and maintenance. This improved understanding will aid in the selection of cost-effective control options and drive down the cost of implementation.

NDOT has installed two different types of treatment vaults receiving equivalent highway stormwater runoff in a side-by-side configuration on State Route 431 in Incline Village, Nevada. These include a MFS treatment device manufactured by CONTECH and a JF-4 treatment device (aka Jellyfish) manufactured by Imbrium Systems. Both vaults use a media filter to remove FSP; however, their designs are uniquely different. The MFS system requires a relatively shallow excavation depth, has a large footprint, and uses granular media for filtration. The Jellyfish system requires a relatively deeper excavation but has a smaller footprint and uses a membrane for filtration.

The configuration provides a unique opportunity for field testing the effectiveness of media treatment vaults at removal of fine sediment particles. Runoff from SR431 is diverted into a splitting vault where the stormwater is distributed in approximately equal amounts to two inflow monitoring vaults where volumetric discharge will be measured with Parshall flumes. Stormwater leaving the inflow monitoring vaults will be routed to the treatment vaults. Stormwater leaving the treatment vaults will be routed through outflow monitoring vaults prior to surface discharge. Continuous turbidity will be monitored at each inflow and outflow flume. Water quality samples may be collected at each monitoring site by autosampler, facilitating a direct comparison of performance effectiveness. Coupled with information on the implementation and O&M costs, this set-up furthermore offers an invaluable cost-effectiveness evaluation of the two promising innovative stormwater treatment technologies.

Goals and Objectives:

The main project goals are to evaluate fine sediment removal performance efficiency and cost-effectiveness of each media treatment vault and to provide guidance for the appropriate deployment of these devices as well as operations and maintenance needs or requirements. This project will be conducted in collaboration with NDOT personnel and representatives who will provide supporting data and cost analyses associated with vault and roadway operations and maintenance.

Project objectives include:

1. Evaluate the Fine Sediment Particle (FSP) removal effectiveness of the treatment devices by

comparing the influent and effluent pollutant loads.

2. Report the initial installation costs and first year maintenance costs associated with each treatment vault and compare their FSP removal efficiency against respective expenses (installation, operation and maintenance as provided by NDOT or affiliated contractors).

3. Track and report information related to site and vault operations. Work in collaboration with NDOT personnel to develop guidance related to the siting, design, application, and the operations and maintenance of these stormwater treatment devices.

4. Assess the reliability of continuous turbidity measured by in-situ sensors versus the laboratory turbidity measured in discrete samples collected by autosampler.

5. Collect and analyze data such that findings are useful for the Lake Clarity Crediting Program, including data relevant to evaluation or update of Pollutant Load Reduction Model (PLRM) characteristic runoff/effluent concentrations (CRCs/CECs).

6. Demonstrate remote access telemetry to the monitoring site, with near real-time data streaming of flows and turbidity available for stakeholder access on the web.

7. Assess overall nutrient (nitrogen and phosphorus) relationships to flow, FSP removal and turbidity.

Progress through SFY 2013:

Narrative Report -- NDEP contract with DRI finalized on February 11, 2013. Shortly after that the equipment was ordered and drafting of the sampling and analysis plan was initiated. Delivery of final necessary equipment components expected from distributors by around April 15, 2013, with site installations to be completed soon thereafter. NDOT contract with DRI is pending.

Some adjustments have been made to the original projected schedule to reflect delays in equipment acquisition, power installation, and initial site calibrations. To compensate for these adjustments the anticipated sampling period has been extended through March 2014 instead of December 2014, as originally projected.

Difficulties with turbidity measurements have become apparent at inflow sites due to insufficient sediment movement and clearing within the monitoring conveyance. Currently attempting to develop alternative implementation for continuous turbidity monitoring.

Report by Task

Sampling and Analysis Plan – the draft SAP was distributed to project partners.

Monitoring Equipment Installation -- New equipment ordered, existing components repaired and refurbished. Installation began as necessary components became available.

Sensor Calibrations and Equipment Maintenance -- Initial calibrations completed. Monthly checks in progress.

Field worksheets and site maintenance tracking -- Developed field worksheets that track site calibrations and O&M activities. In progress.

Event selection for sampling and characterization -- Identify events to be sampled and determine

appropriate sampling frequency. In progress.

Event site monitoring and sampling -- Pre-event site preparation, event sampling and data collection, post-event sample delivery with COCs. In progress.

Load reductions/outcomes/or ongoing:

The main project goals are to evaluate fine sediment removal performance efficiency and cost-effectiveness of each media treatment vault and to provide guidance for the appropriate deployment of these devices as well as operations and maintenance needs or requirements.

Project title and Contractor:

Discover the Waters of Lake Tahoe

Project WET Foundation

Primary Contact:

Dennis Nelson, President and CEO
1001 W. Oak Street, Suite 210
Bozeman, MT 59715
Dennis.nelson@projectwet.org
Ph: 406-585-4101

Project Location:

Lake Tahoe Basin
8-Digit USGS HUC: Lake Tahoe 16050101

Project Summary:

The Project WET Foundation will publish a full-color, 16-page activity booklet for children ages 8 to12.

Start and Completion Dates:

March 1, 2013 (start)
June 30, 2015 (completion)

Fiscal Summary:

Total Project Cost:	$ 117,331
NDEP Funds:	$ 75,000
Non-Federal Match Funds:	$ 42,331

Total Grant Reimbursements through June 30, 2013:

$14,812

Project Partners:

Washoe Tribe of Nevada and California
Lake Tahoe Environmental Science Magnet School
UC Davis Tahoe Environmental Research Center
Tahoe Regional Planning Agency

Background:

The Lake Tahoe watershed is a unique alpine ecosystem located in the Sierra Nevada Mountains of Nevada and California. The watershed drains to Lake Tahoe, which has become known as "the jewel of the Sierra" due to its striking blue color and astonishing clarity. This, the largest alpine lake and second deepest lake in North America, is designated "Water of Extraordinary Aesthetic or Ecologic Value" by the State of Nevada and "Outstanding National Resource Water" by the State of California.

Over the last several centuries, pressure on watershed resources has increased proportionally with human intervention. During the mid-1800s, Lake Tahoe's forests fueled Comstock-era mining and the watershed was subjected to uncontrolled sheep grazing and cattle ranching. A century later, the watershed underwent rapid growth and development to accommodate recreation, tourism, and home ownership. These activities have disrupted natural processes and functions acting within the watershed. Ecological impacts include diminished deep water clarity; degradation of nearshore quality including nuisance infestations of algae and aquatic invasive plants and animals; degradation and loss of riparian and wetland habitat and function; and impaired forest health and increased risk of wildfire. Degradation of Tahoe's water quality threatens its ecological functions and status, and its value as a recreational destination, a drinking water source and an asset to the local and regional economies.

Project Description, Goals and Objectives:

One of the best approaches to addressing the water quality challenges facing the Lake Tahoe Basin is education—engaging citizens young and old to work together with land and water managers to raise awareness and understanding of water quality impacts and inform the public of what they can do to decrease nonpoint source pollution and the spread of invasive species.

The mission of the Project WET Foundation is to reach children, parents, educators, and communities of the world with water education. By educating young people about their local waters, Project WET seeks to give children science-based knowledge that will inform their behavior and choices for the rest of their lives. Research has shown that when educating a child, the influence doesn't stop there. Intergenerational learning is a powerful means of addressing current environmental problems because it multiplies the impact of education. By focusing on children, it is possible to create environmentally conscious future adults while simultaneously influencing present adults.

The goal of this project is to increase youth awareness of the importance of Lake Tahoe and the Lake Tahoe Basin and inspire responsible stewardship of the lake into the future. The goals of this project will be met by accomplishing these specific objectives:

- Develop a full-color Discover the Waters of Lake Tahoe activity booklet aimed at educating children ages 8 to 12 but relevant to people of all ages who are interested in Lake Tahoe and who seek to help children understand the basin — such as parents, caregivers, public and private school teachers, water resource managers, aquatic resource managers and educators, and businesses.
- Provide science-based information through diverse education methods; content-rich text; interactive games; challenging demonstrations; experiments; maps; and fun exercises.
- Focus on key watershed topics, such as nonpoint source pollution prevention and the spread of aquatic invasive species.
- Educate at least 35,000 youth and their families through the distribution of activity booklets by numerous organizations throughout Nevada and California.

Progress through SFY 2013:

In April 2013, Project WET established a Leadership Team to guide the development of the Discover the Waters of Lake Tahoe activity booklet project. In April and May 2013, Project WET conducted initial research about Lake Tahoe and created a preliminary list of topics and general content ideas for the

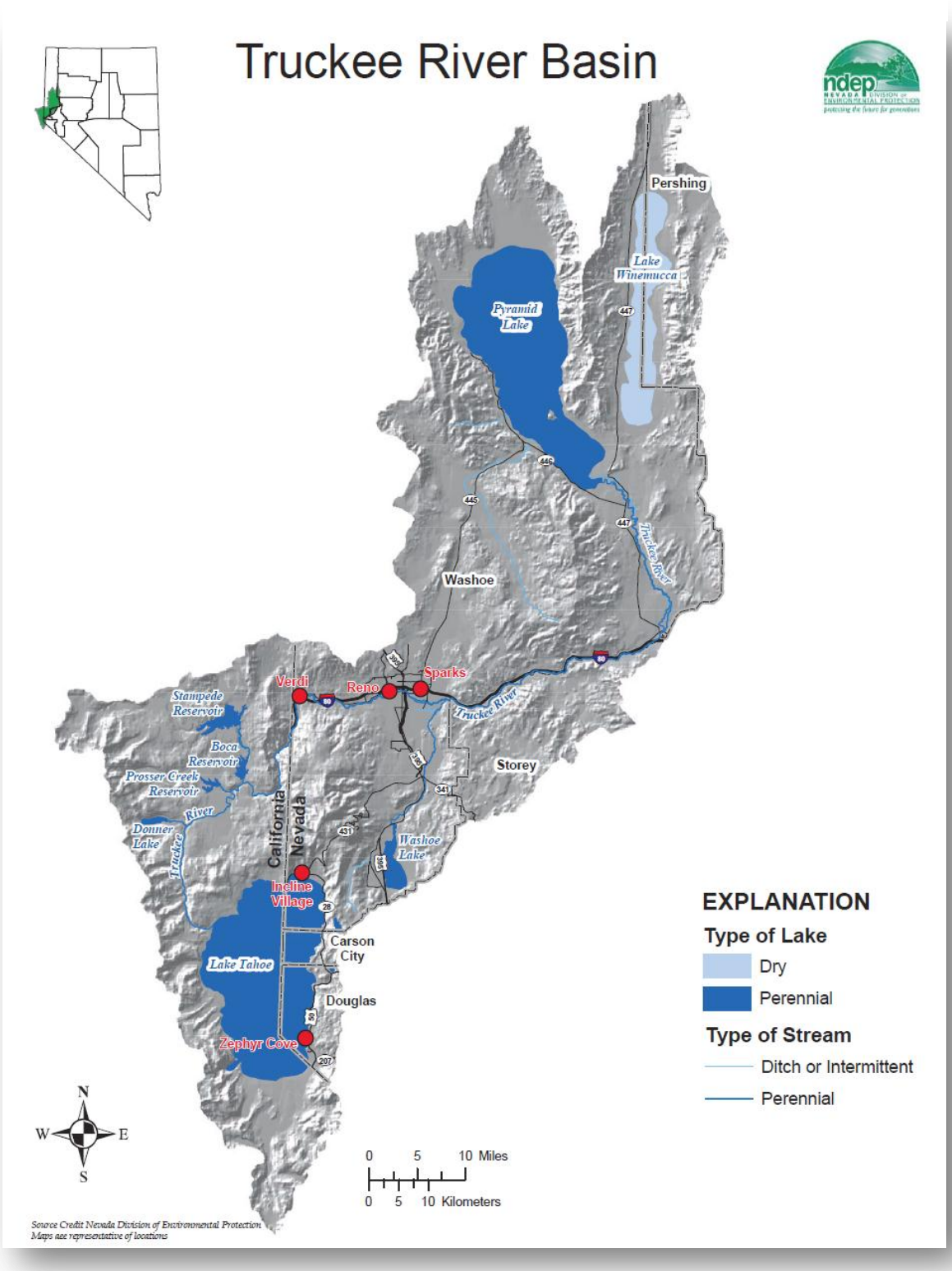
Discover the Waters of Lake Tahoe activity booklet. On May 22, 2013, the Leadership Team met at the UC Davis campus, Tahoe Environmental Research Center, in Incline Village, Nevada, to discuss content ideas and teaching methods for the activity booklet.

Project WET's Dennis, Molly, and Jessica discussed next steps. Project WET will begin writing the text, based on the key topics identified in the Leadership Team meeting. Project WET will contact the Leadership Team as necessary with questions, and in the fall Project WET will submit the manuscript to the Leadership Team for review. Leadership Team members are asked to review the manuscript (in the form of a Word document) either in Google Docs or through traditional email, using the Track Changes feature in Word to make any changes to the text. Project WET will review these edits, clean up the text, and submit the final manuscript to the Leadership Team for approval. After that, Project WET will begin the editing, design, and illustration phases.

Project WET has compiled key research and background sources and is working to finalize the booklet's detailed outline in order to commence writing.

Load reductions/outcomes/or ongoing:

This education will not produce direct load reductions. By educating young people about their local waters, Project WET and partners will impart science-based knowledge to children that will inform their behavior and choices for the rest of their lives.


Truckee River Basin
Pershing
Lake Winnemucca
Pyramid Lake
Washoe
Truckee River
Verdi
Reno
Sparks
Stampede Reservoir
Boca Reservoir
Prosser Creek Reservoir
Donner Lake
Truckee River
California
Nevada
Storey
Washoe Lake
Incline Village
Carson City
Lake Tahoe
Douglas
Zephyr Cove
EXPLANATION
Type of Lake
Dry
Perennial
Type of Stream
Ditch or Intermittent
Perennial
N
W
E
S
0 5 10 Miles
0 5 10 Kilometers
Source Credit Nevada Division of Environmental Protection
Maps are representative of locations

Truckee River Watershed

The Washoe County 208 Water Quality Management Plan was originally approved in 1978 and has undergone three revisions. Under an agreement dated April 9, 1991, Washoe County and the Cities of Reno and Sparks established that Washoe County should perform the duties of coordinating and managing services related to wastewater treatment, water supply, flood control and storm drainage and the protection of the Truckee River water quality. In 1991, Washoe County commissioned a study of water supply, waste treatment and water quality. The results of this study are the basis for the third (and current) revision. Some of the main issues addressed in the third revision are: 1) identification of the needs of the population for wastewater treatment, sewer service boundaries and effluent disposal; 2) adoption of the final Total Maximum Daily Loads (TMDLs) and Waste Load Allocations (WLAs) for the Truckee River; and 3) improvement of water quality conditions of the Truckee River system by reduction of urban point and nonpoint source pollutant loadings. Another issue addressed in the plan is the implementation of best management practices related to stormwater pollution runoff into the Truckee River.

The Truckee River and its tributaries provide water for numerous uses including municipal and industrial supplies in the Reno/Sparks area, irrigated agricultural and urban lands, power generation, and spawning for Lahontan Cutthroat Trout and Cui-ui. In addition, water from the Truckee River is diverted from the basin through the Truckee Canal to Lahontan Reservoir in the Carson River Basin, where it serves the Newlands Irrigation Project. Pyramid Lake, on the Pyramid Lake Paiute Indian Reservation, is the terminus of the Truckee River and is a major sport fishery. Water quality of the lake is intimately related to the quality of the Truckee River. Water quality and quantity issues in the Truckee River Basin are both controversial and complex, and involve diverse interested parties including several federal agencies, the States of Nevada and California, Washoe County, the cities of Reno and Sparks, the Pyramid Lake Paiute Tribe, Sierra Pacific Power Co., Newlands Project irrigators and individual users and consumers.

The State and 13 other parties are involved in the resolution and implementation of the Truckee River Operating Agreement (TROA). The addresses, among other provisions, the protection of the endangered species of Cui-ui Lakesucker (Chasmistes cujus) and the improvement of water quality in the lower Truckee River and Pyramid Lake. The agreement is also serving as a catalyst for the development of several watershed-wide activities: a comprehensive monitoring program, the development of TMDLs, and a greater integration of nonpoint source concerns in the overall planning for the watershed.

In 1995, the Nevada Legislature passed legislation which created the Regional Water Planning Commission. This Commission developed the 1995-2015 Comprehensive Regional Water Management Plan for Washoe County. The purpose of the Regional Water Plan is to provide the region with an outline of how water will be managed to meet the needs of citizens into the future. Major components of the plan are identification of future water supply and wastewater facilities, regional flood control and drainage projects, and development of a conservation program.

Key Watershed Partners

Nevada Division of State Lands
Truckee Meadows Water Authority
Truckee River Flood Project
Truckee River Watershed Council
Washoe County

Pollution Category, Subcategory, and/or Sources of Pollution Addressed:

Agriculture
Construction
Urban Runoff
Hydrologic and Habitat Modification

Project title and Contractor: **Truckee River Watershed Education Toolkit DEP12-022**
City of Reno Public Works

Primary Contact:
Lynell M. Garfield-Qualls
City of Reno Public Works
P.O. Box 40342
Reno, NV 89504

Project Location:
Truckee River
16050102 Truckee

Project Summary:
Six educational events will be implemented to provide outreach regarding water quality and watershed issues to area schoolchildren, the Walker River community and area visitors.

Start and Completion Dates: 5/18/12 – 12/31/14

Fiscal Summary:

Grant Amount	$49,810.00
Match	$57,813.78
	$107,623.78

Total Grant Reimbursements through June 30, 2013:
$26,566.18

Project Partners:
Truckee Meadows Watershed Committee
City of Sparks
Washoe County
Nevada Dept. of Transportation
Pyramid Lake Paiute Tribe
Nevada Discovery Museum
Washoe County School District

Background:
Currently, the Truckee River has Nevada reaches which are listed on the NV 2004 303(d) Impaired Water Bodies List (see Reference section 7) for temperature, total phosphorus, and turbidity. Total Maximum Daily Loads (TMDLs) have been established for reaches of the Lower River for total nitrogen, total phosphorus, and total dissolved solids (TDS). These can be influenced by nonpoint source pollution and nuisance water runoff from the Truckee Meadows urbanized areas. One of the goals of this project is to educate the public on watershed connectivity and provide a foundation for an informed public. We anticipate this may reduce impairment to the Truckee River by reducing overwatering, overapplication of lawn care chemicals, poor waste management, and other practices that contribute to nonpoint source pollution.

Project Description, Goals and Objectives

This project takes the next step in engaging the community, building upon existing outreach tools like the online Truckee River Watershed Map Tool, for multiple types of eudcation. Providing tools throughout the region for residents to view will help establish a sense of place, and generate a sense of respect for the river. Providing take-home tools as watershed maps will provide local teachers with educational tools for classrooms, and help parents and students explore the connectivity between our streams and the Truckee River together. This project will produce and install 100 tributary signs in the Truckee River Watershed. Additionally, this project will develop and produce an educational Trucke River Watershed map for use in Washoe County schools to increase understanding of NPS issues.

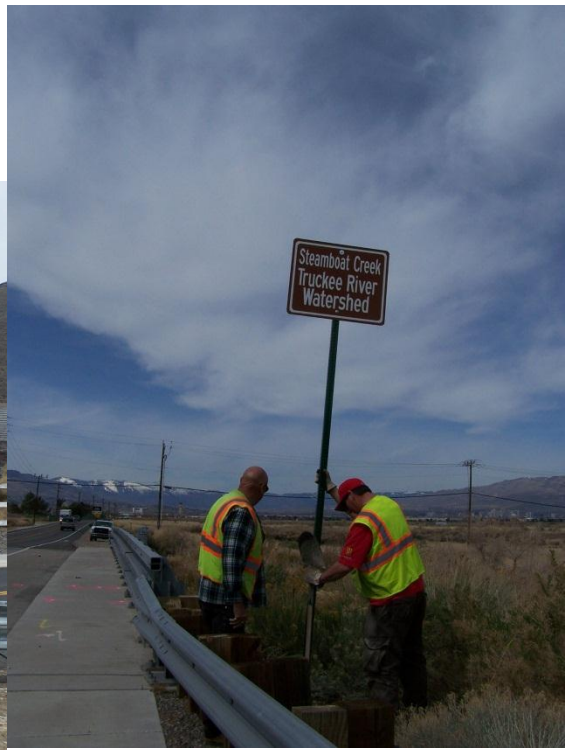
Progress in SFY 13:

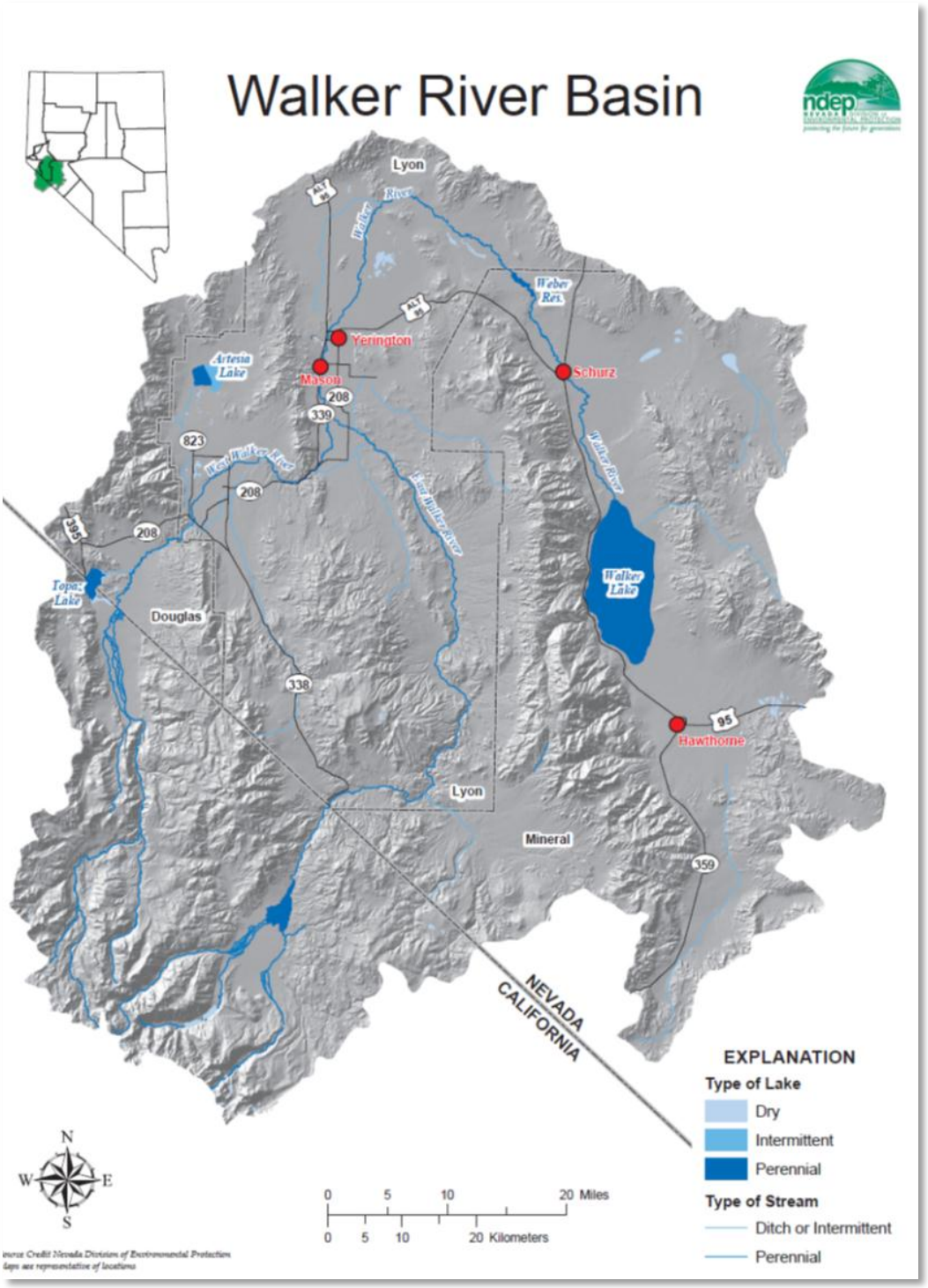
The City of Reno installed all 33 signs within the City rights of way. City of Sparks has approved sites and installed 16 signs on the North Truckee Drain in their right of way. Washoe County has approved sites and installed 24 signs within their right of way, plus one additional in City of Reno right of way over Steamboat Creek. NDOT has approved sites for sign installation, and are in discussions on details including size of posts and differing specs between agencies. Signs for NDOT, while not considered a match for time/equipment due to permit requirements, will be fabricated within this quarter, and installed.

Mesh Creative has depicted the Truckee Meadows region and its connectivity to the Truckee River with approachable style and design. The process of design continues. There is a commitment from the Washoe County School District to distribute the watershed maps to mailboxes of all teachers in the district, potentially exceeding the minimum of 60% of teachers receiving the map.

Load reductions/outcomes/or ongoing: Load reductions not applicable.

Washoe County installing watershed sign




Walker River Basin
Lyon
Yerington
Mason
Schurz
Weber Res.
Artesia Lake
Walker River
West Walker River
East Walker River
Topaz Lake
Douglas
Walker Lake
Hawthorne
Lyon
Mineral
NEVADA
CALIFORNIA
EXPLANATION
Type of Lake
Dry
Intermittent
Perennial
Type of Stream
Ditch or Intermittent
Perennial
0 5 10 20 Miles
0 5 10 20 Kilometers
N
W
E
S

Project title and Contractor: **Walker River Basin NPS Education DEP11-026**
Mason Valley Conservation District (DVCD)

Primary Contact: Michelle Langsdorf (775)463-2265 Ext.106

Project Location: Walker River near Yerington

Project Summary: Six educational events will be implemented to provide outreach regarding water quality and watershed issues to area schoolchildren, the Walker River community and area visitors.

Start and Completion Dates: 8/9/11 – 12/31/13

Fiscal Summary:

Grant Amount	$39,243
Expended	$29,621

Project Partners: Match is primarily in kind generated by teachers, citizen and student volunteers at workdays.

Background: Reduction of nonpoint source (NPS) pollution is best achieved through education. Six events will be implemented over a period of two years by Mason Valley Conservation District (MVCD) for school age students, the local community and visitors to the Walker River Basin. Concerns include contaminants in runoff from livestock management areas, agricultural fields, construction sites and urban settings.

Project Description, Goals and Objectives

Smith Valley School and Yerington High School students will participate in "Walker River Basin Workday" events to be held at various locations. At each Workday, students will rotate between various resource and nonpoint source pollution oriented stations lead by resource professionals and student mentors. The stations will inform the students about such topics as grazing management, water quality monitoring, soil classification, river restoration using bioengineering techniques, local wildlife management and the water cycle. A NPS watershed model will also be utilized to engage the students. Educating one student provides opportunities for the information to be passed to their entire family. Teachers state they tend to have greater success delivering natural resource concepts to their students via "hands on" activities in the field.

MVCD will also create a nonpoint source pollution educational display for use at the Lyon County Fair, meetings or other public events. Handouts and flyers will also be available to help visitors and local residents alike become more aware of their impact to our environment.

Progress in SFY 13:

Activity highlights

1. District Manager and Educational Coordinator organized 2 workshop/workday events for local students this past spring. A third will be offered this fall that will include planting willows along a river restoration site.
2. District staff developed NPS display booth for use at the Lyon County Fair. District Staff also provided activities for fair attendees to participate in that illustrated habitat restoration concepts.

Load reductions/outcomes/or ongoing: Load reductions not applicable.

Project title and Contractor: **Walker River Snyder Bank Stabilization Project DEP S 13-017**
Mason Valley Conservation District (DVCD)

Primary Contact: Michelle Langsdorf (775)463-2265 Ext.106

Project Location: Walker River near Yerington

Project Summary: River bank will be stabilized to mitigate erosion.

Start and Completion Dates: 2/28/13 – 12/31/14

Fiscal Summary:

Grant Amount	$39,243
Expended	$662.23

Project Partners: Landowner, Nevada Department of Wildlife

Background: Mason Valley Conservation District (MVCD) identified 340 linear feet of unstable riverbank on the Walker River in Lyon County for restoration. MVCD attempted to stabilize the bank in 2006 using bioengineering techniques; however, vegetation failed to establish without soil protection. The riverbank is eroding approximately 1-3 ft per year and is currently over 10 ft high.

Project Description, Goals and Objectives: The bank will be re-contoured to a 3:1 slope. The property owner will donate equipment use and time for equipment operator. Willows will be harvested from the Mason Valley Wildlife Refuge to make the bundles which will be installed prior to placement of riprap. Pre and post construction cross sectional surveys and photo monitoring will also be conducted. The property owner has also agreed to replace riprap or plant additional willows as needed and will manage grazing to protect vegetation growth. To determine initial success, project must withstand high flows during spring runoff and or any storm events during the next year.

Progress in SFY 13:

Activity highlights

1. Obtained required permits (Army Corps, NDEP) for project construction.
2. Conducted pre-project photo monitoring.

Load reductions/outcomes/or ongoing: Load reductions will be included with Final Report.

Multiple Watershed Projects

Truckee River Basin/Carson River Basin/Humboldt River Basin

Project title and Contractor: **Watershed Education Initiative 2012 -2013**
DEP CC# 12-025 Sierra Nevada Journeys

Primary Contact: Laurie Grey, Professional Development Coordinator
laurie@sierranevadajourneys.org 775-355-1688

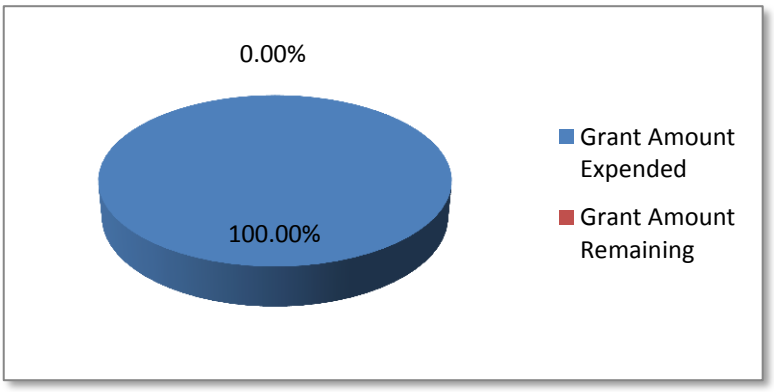
Project Location: Washoe County, Lyon County, Humboldt County
8-Digit USGS HUC: Truckee 16050102, Middle Carson 16050202, Middle Humboldt 16040105

Project Summary: During Q1 and Q2 of 2013 Sierra Nevada Journeys (SNJ) continued to implement the Watershed Education Initiative under NDEP 319(h) contract award. This Initiative inspires students to learn about their local watersheds and non-point source pollution, and empowers them to take care of their local water sources. The Watershed Education Initiative is delivered through in-school lessons, field experiences, residential programs and professional development opportunities for teachers.
A partnership between Sierra Nevada Journeys (SNJ) and Nevada Outdoor School (NOS) also allows a further reach of these watershed programs ensuring that even more students learn about their local watersheds and water sources. SNJ and NOS work in this joint contract to provide watershed education programs to 1,300 students and 60 educators in Northern Nevada. The Watershed Education Initiative works to provide hands-on experiences that show students how their actions directly impact their local watershed. This Initiative strives to inspire students and educators to learn about their local watersheds, and to empower them to take care of their water sources.

Start and Completion Dates: 2/14/12 – 06/30/13

Fiscal Summary: 319(h) funds awarded $41,036.00
Total amount of non-federal match funds $42,155.00
Total Project Cost $83,191.00

Total Grant Reimbursements through June 30, 2012: $41,036.34



Project Partners:

Lyon County School District
Washoe County School District
Humboldt County School District
Nevada Outdoor School
Northwest Regional Professional Development Program
Washoe County School District TEAM UP (after-school program)

Kate Smith Elementary students studying riparian vegetation and collecting water samples for DO and pH tests. McCarran Ranch, Washoe County NV.

Background: Nevada school districts face challenges in K-12 science education. Nevada's science scores are significantly lower than the national average. This demonstrates that there is a need for improved science education, and there is a need for environmental education. Research shows that hands-on activities and outdoor environmental education programs are an effective way to teach science. An EPA study showed that one of the reasons people do not adopt stewardship practices is because they don't think small actions really have an impact on the environment. Direct experience with nature is the most highly cited influence on environmental attitude and activism. Many Nevada teachers don't have the resources or training to provide these types of educational experiences to their students.

As nonpoint source water pollution is the leading cause of water quality impairment in Nevada, it's important for students to explore their local watersheds so they can play a part in protecting them. The Watershed Education Initiative is working to provide hands-on experiences that show students how their actions directly impact their local watershed.

Project Description, Goals and Objectives:

1 To inform students and educators about watershed concepts, with the message that what they do on land affects the health of local streams and water bodies.
2 To increase students' sense of stewardship, understanding how their actions affect their environment, and what they can do to prevent NPS pollution.
3 To provide professional development workshops that offer training and resources to incorporate watershed education into classroom curriculum.
4 Provide watershed education (programs) to 1,300 students and 60 educators in northern Nevada.

Within the framework of this contract, SNJ provides in-class lessons, after-school programs, residential experiences, one-day field experiences, and professional development opportunities to promote and sustain student educational experiences. NOS offers 2nd grade students a field trip to the Humboldt River to introduce students to their watershed and 3rd grade students a field trip to explore their watershed in Water Canyon.

Progress in SFY 13: Sierra Nevada Journeys (SNJ) School and Field-based Program encourages students to learn about their local watersheds and non-point source pollution, and strives to empower them to take care of their local water sources. 1327 Students (grades 3rd, 4th, 5th & 6-8th) were connected with their local watersheds through hands-on activities in their classrooms and water quality testing of a local water source. SNJ instructors delivered lessons on watersheds, the water cycle, weather, water quality, non-point source water pollution. A field-based component where students visited their local watershed to conduct water quality testing was also provided to students.

Forty-eight students from Sage Ridge and Duncan Elementary, and 104 students from Double Diamond Elementary, participated in multiple day experiential science courses at SNJ's Grizzly Creek Ranch Campus in nearby Portola, CA. These students participated in watershed education during courses on forest ecology and learned how healthy water supplies lead to healthy ecosystems.

Twenty seven educators were served through two Project WET /PLT lessons, including the Early Years Signs of Spring lesson and the early childhood Preservice lesson. These courses were three hours long and incorporated 6 Wet 2.0 lessons. The courses focused on watershed education, the Truckee River Watershed Map tool and using the outdoors as an extension of the classroom through hands on learning. All teachers were from WCSD, including some homeshool teachers.

Load reductions/outcomes/or ongoing: This public outreach/education program has completed one quarter's work with its target audience and has implemented outreach methods as outline in the scope of work. The table below provides an update on progress toward the metrics outlined in the grant proposal.

Goal:	Progress Q2_2013:
1 75% of students will be able to list two ways to protect their local watershed	1 66% of students will be able to list two ways to protect their local watershed
2 75% increase in students who can define the term watershed	2 78% of students could define the term watershed (a 77% increase)
3 80% increase in students who can define or describe nonpoint source water pollution	3 53% increase in students who can define or describe nonpoint source water pollution
4 ActionEducation: During the course of the lessons students will identify steps they will implement to reduce nonpoint source water pollution and to increase watershed stewardship behavior which aims to improve the health of their local watershed.	4 Students identified steps they will implement to reduce nonpoint source water pollution such as driving less and ensuring vehicles have no fluid leaks and using less fertilizer.
5 Educators will complete evaluations at the conclusion of program(s).	5 Educator's evaluations. 100 % of workshop participants responded "agree" to the following assessment questions, answering on a 1-5 likert scale (1 being "disagree" / 5 being "agree"). ▪The information, strategies, and instructional methods shared were helpful to you. ▪The workshop prepared you to use the lessons/material with your audience. ▪I will recommend this workshop to colleagues or other professionals. ▪I will plan to use some of the resources, strategies, and/or lessons learned today.

Lake Tahoe Basin/Truckee River Basin

Project title and Contractor: **Tahoe's Future is our Children's Future**
DEP CC# 11-024 Great Basin Outdoor School

Primary Contact: Sue Jacox, President; suejacox@nvbell.net; (775) 849-1890

Project Location: Truckee River Basin, Lake Tahoe Basin
8-Digit USGS HUCs: Truckee 16050102, Lake Tahoe 16050101

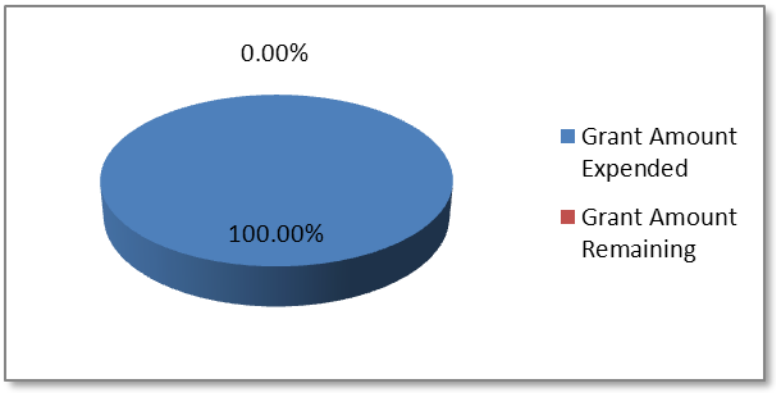
Project Summary: Great Basin Outdoor School is a non-profit organization devoted to offering youth environmental education and field studies on the shore of Tahoe for more than 10 years. Fifth and sixth grade classes study local ecology and watershed issues during field studies at camps in the Tahoe Basin and perform service learning projects to protect water quality. Students receive hands-on experience with natural water sources, riparian habitats, and aquatic organisms. The program teaches students about their local watersheds, and inspires them to take care of the watersheds. During their resident-education camp, students become aware of their personal effect on the environment and their responsibility to protect water quality and aquatic ecosystems, they learn about PS and NPS water pollution; they discover that their actions affect the environment and they can and do make a difference. Students assist with installation of

Start and Completion Dates: 6/14/11 – 06/30/13

Fiscal Summary: 319(h) funds awarded $ 55,063.00
Total amount of non-federal match funds $ 59,923.00
Total Project Cost $114,986.00

Total Grant Reimbursements through June 30, 2013:

$55,063.00



Project Partners: --Tahoe Regional Planning Agency, Nevada Division of Forestry, Otis Bay Ecological Consultants, Galena Creek Regional Park, UC Davis Tahoe Environmental Research Center, Galilee Episcopal Camp & Conference Center, Marine Research & Education, UNR Cooperative Extension, Nevada Division of Environmental Protection, U.S. Fish and Wildlife Service.

Minden students snowshoe with teacher Pam Ertel and GBOS naturalist "Sugar Pine".

Background Lake Tahoe's fabled clarity is threatened by non-point source pollution that directly impacts the water quality of the basin, as well as the adjacent watersheds. Public awareness and involvement in pollution prevention are extended through Washoe, Storey, Douglas, Carson, and Lyon County school districts by student and adult participation in outdoor educational programming offered through Great Basin Outdoor School. The multi-day residential science camps experiences at Lake Tahoe have a most profound and lasting effect on youth and their teachers.

Project Description, Goals and Objectives GBOS presents 5 to 7 four-day field study sessions each spring and each fall of 2011 - 2013 for children at Tahoe's Camp Galilee covering the water cycle, land and aquatic ecosystems, water quality, and local environmental issues. Participants implement best management practices (BMPs) on camp property to meet the TRPA BMP Retrofit Ordinance. The latest project reduces erosion and sediment loading to Lake Tahoe by re-vegetation to improve infiltration and stabilize soil.

GBOS partners with TRPA, NDEP, UC Davis Tahoe Environmental Science Center, Marine Research & Education, and others to teach about the natural environment. GBOS participants volunteer on service learning projects to actually help protect water quality. BMP projects are initiated to promote critical thinking about local environmental issues and personal responsibility for improving and protecting the environment. This type of active stewardship increases awareness of point and nonpoint source pollution and effects on water quality. Great Basin Outdoor School will provide additional types of inquiry-based investigations and hands-on activities to teach students about water quality, biodiversity, watersheds and responsible watershed management. GBOS staff encourages participating schools, educators and students to stay actively involved in learning about and embracing their local watershed.

Progress in SFY 13 GOBS programming has allowed youth and adults to learn about water quality and their home watersheds. The series of four-day science camps draws fifth and sixth graders, teen and adult cabin leaders, and teachers from Reno, Sparks, Virginia City, Carson City, Wadsworth, and Lockwood. GBOS hosted a Project WET workshop (June 2013) that attracted 12 educators and 8 children from northern Nevada. The Project WET workshop partnered with resource professionals from the Nevada Division of Environmental Protection, U.S. Forest Service, U.S. Fish & Wildlife Service, and Otis Bay Environmental Consultants.

Five weeks of science camps at Tahoe follows a successful pattern of teaching the inter-connectedness of all elements of the ecosystem on day one, traveling to Spooner Lake on day two to dip net, observe, and identify macroinvertebrates as indicators of water quality, exploring aquatic food chains and water clarity aboard a research boat on day three; and doing conservation activities and BMP projects on day four. BMP projects included students raking mulch out to cover bare soil and planting Sugar Pine seedlings to stabilize slopes at Camp Galilee where runoff from Highway 50 needs mitigation to limit sediment washing into the lake.

Load reductions/outcomes/or ongoing

Program Evaluation

The Great Basin Outdoor School is exemplary in its methods and outcomes. This is an ongoing educational program that has continued to expand its reach and connectivity to communities within northern Nevada watersheds. The final quarterly report was received after a winter session. The winter programs were not tasks under the contract workplan but they further GBOS's water education goals. Most children are from low income schools and groups such as Big Brothers Big Sisters. Water from the Sierra snowpack is a major theme for Great Basin Outdoor School during winter ecology programs in January and February. All 514 students from Washoe and Douglas Counties participating in the winter session also learned about the water cycle, winter safety, the reason for the seasons, and winter adaptations of local plants and animals. All explored on snowshoes, most for the first time.

Truckee River Basin/Carson River Basin

Project title and Contractor: **Nonpoint Source Education for Municipal Officials (NEMO)**
DEP CC# S11-024 Board of Regents, NSHE obo UNR

Primary Contact: Susan Donaldson, Ph.D.; donaldsons@unce.unr.edu; 775-856-8401

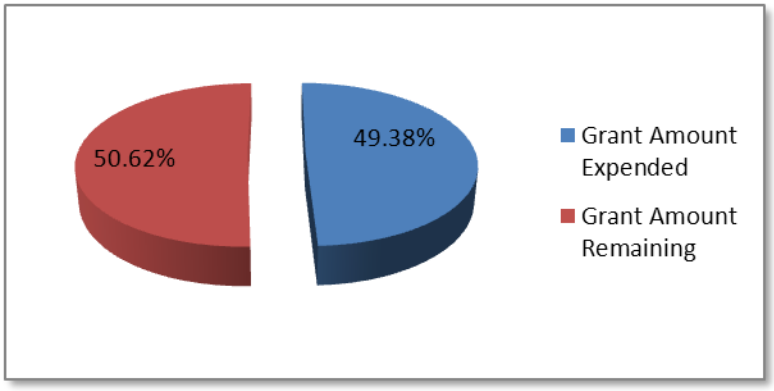
Project Location:
Washoe County, Carson City, Douglas County, Lyon County
8-Digit USGS HUCs: Truckee 16050102, Middle Carson 16050202, Lower Carson 16050203

Project Summary: Grant funding allows the NEMO program and its participants to overcome financial barriers to participate in NEMO workshops and events. The overall goal of NEMO Nevada is to educate local land-use officials and decision makers in western Nevada on the connection between their decisions and water quality so they can plan appropriately in advance and avoid the need for later mitigations; and to aid them in asking the right questions during the planning and development process in their communities. More effective approaches to planned development will reduce adverse impacts to water quality and other natural resources. A secondary goal is to improve the quality of installation and maintenance of construction site BMPs to reduce NPS loads from disturbed sites.

Start and Completion Dates 5/3/11 – 12/31/13

Fiscal Summary: 319(h) funds awarded $ 52,542.00
Total amount of non-federal match funds $ 52,542.00
Total Project Cost $105,084.00

Total Grant Reimbursements through June 30, 2013: $25,947.32



Project Partners: US EPA Region 9 NDEP NDOT
City of Reno Carson Water Subconservancy District

Background Growth and development generate significant erosion and pollution loads containing phosphorus, nitrogen, heavy metals, hydrocarbons, sediments, and debris that run off, into, and threaten the quality of surface waters. In the Truckee River Basin, 303(d) listed pollutants of concern include temperature, total phosphorus (formerly), turbidity, metals, and dissolved oxygen. To date, TMDLs have been set for total nitrogen, total phosphorus, and TDS from East McCarran to the Pyramid Lake Reservation. In the Carson River Basin, pollutants of concern include metals, temperature, total

suspended solids, turbidity, and total phosphorus. While progress has been made in using Low Impact Development (LID) practices, there is still need to provide communities with the education and technical assistance they need in order to improve their overall land-use policies. Land-use decisions are made primarily at the local level by a combination of elected, appointed, and volunteer officials serving on land-use commissions, such as planning, zoning, and conservation boards and commissions. These officials are not provided with education on the effects of changes in land use on water quality, other than through the NEMO Nevada program.

Project Description, Goals and Objectives

1 Continue NEMO Nevada educational offerings and workshops in Northern Nevada.
2 Continue and expand riparian buffer education program, including the Carson River video contest.
3 Continue and expand field trainings in the correct selection, installation and maintenance of construction site BMPs.

Using a variety of educational methods including presentations, trainings, seminars, field trainings, websites, video contests and consultations, continue to provide public education and outreach on nonpoint source pollution and measures to plan for impacts related to changes in land use.

Progress in SFY 13 NEMO planning meetings are conducted quarterly. The following is a summary of the primary highlights of this exemplary program in Nevada.

Basic NEMO classes: A Basic NEMO training that concentrated on the Truckee River watershed was held on January 25, 2013. Personal invitations were sent to all decision makers, with special invitations sent to newly elected or appointed decision makers. The workshop was attended by 9 people from 7 different decision or advisory boards. A basic NEMO training that concentrated on the Carson River watershed occurred on March 1, 2013 in Carson City. Personal invitations were sent to all decision makers, with special invitations sent to newly elected or appointed decision makers. The workshop was attended by 13 people from 9 different decision or advisory boards. Ed James developed and taught the Carson River water supply/wastewater PowerPoint.

A section on Construction Site BMPs is posted to the NEMO website as a separate button to make it easier for people to find the information. It includes resources and sample inspection forms, as well as a link to NDEP's General Permit for construction sites greater than 1 acre.

Due to University re-structuring and changes within Cooperative Extension, Dr. Sue Donaldson will change her role from Principal Investigator (PI) to a Letter of Appointment (LOA), as she will have Emeritus status after June 30, 2013. Dr. Steve Lewis, already a Co-PI on this project, will become the PI and be responsible for NEMO's continuation of the Scope of Work and for successful completion of the contract's objectives and deliverables until the current award expires on 12/31/13.
Dr. Donaldson will teach the fall workshops and work on a final report in Oct. and Nov. 2013. Trainings are scheduled for November 15 (Carson River) and November 22 (Truckee River).

Dr. Donaldson collaborated with the Carson River Education Working Group to plan a forum on Environmental Education for Feb. 6, 2013 and participated in group meetings and visioning. Dr. Donaldson gave the keynote. "Clickers" were used to collect evaluation data.

Load reductions/outcomes/or ongoing
The NEMO program conducted a longitudinal survey that was sent to all NEMO attendees since the program's inception in 2004, which constituted 206 of the 282 original attendees, due to incorrect emails and other contact information. A total of 63 attendees participated in the survey (30.6% response rate).
The following is an abbreviated review of the survey results.

- Of those responding to the survey, more than 80% still have the binder and workshop materials.
- Over 60% of the respondents indicated they had used the materials and that they had shared the materials with others.
- About half the respondents currently serve or have served on an advisory or decision-making board.
- Over 80% of the survey respondents have reviewed development plans.
- Over 75% of the respondents that have served on or currently serve on an advisory or decision-making board and/or have reviewed plans found the NEMO Nevada training to have been useful in that process.
- Over 98% of respondents indicated they are much more likely or somewhat more likely to ask questions about stormwater issues when reviewing development plans.

Non-priority Watershed Activities

Project title and Contractor:

Robert's Creek Allotment Offsite Stockwater & Monitoring, DEP S 11-021

Eureka County Department of Natural Resources

Primary Contact:

Jake Tibbitts
P.O. Box 682
Eureka, NV 89316
775-237-6010

Project Location:

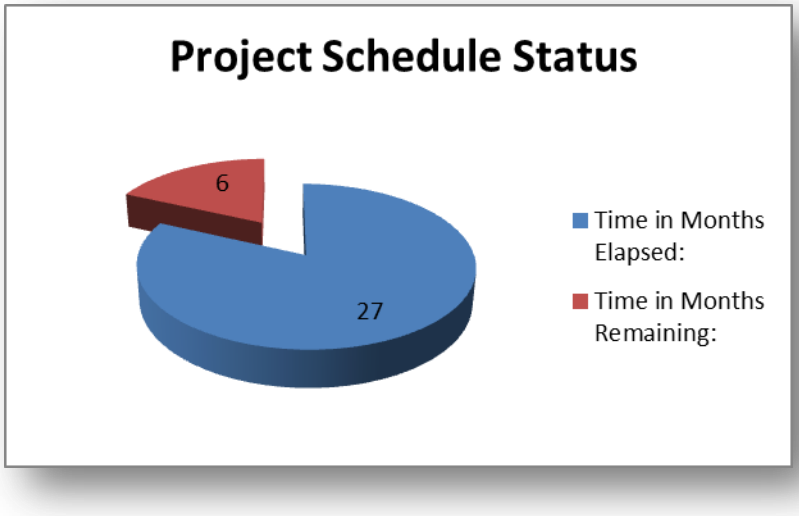
Central Hydrographic Region
Pine and Kobeh Valleys, Eureka County
Nevada 8-Digit Hydrologic Unit Code(s) & Catalog Name(s):
16040104 Pine
16060005 Diamond-Monitor Valley
Latitude: 39.89 Longitude: -116.204

Project Summary:

Diamond Cattle Co. will install an off-site livestock watering facility consisting of a well, a solar pumping system, and associated tank and trough on private land within the Roberts Creek Allotment to augment current efforts to draw cattle off of riparian areas and better distribute cattle. Upland and riparian monitoring in cooperation with BLM will also continue in order to evaluate current and proposed management practices for improving riparian habitat and rangeland health. Diamond Cattle Co. received a 319(h) Grant (Roberts Creek Allotment Water Quality and Monitoring Project) in 2010 which used funds for riparian fencing, range riding, and monitoring. Installation of off-site livestock watering facilities and continuation of monitoring will synergize the effectiveness of the previous project's funding.

Start and Completion Dates:

March 17, 2011 – December 31, 2013

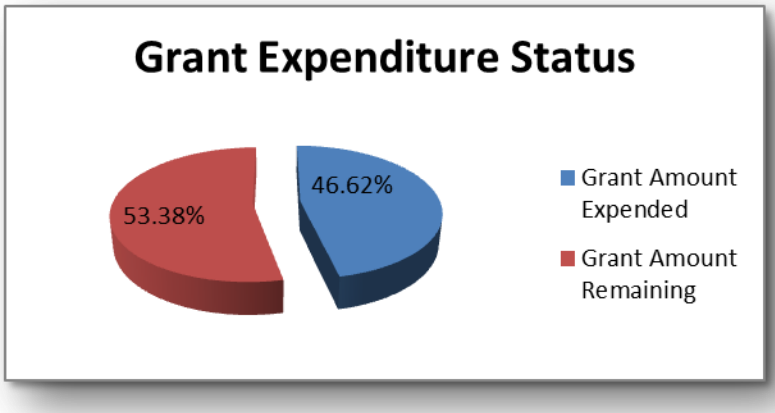


Fiscal Summary:

319(h) funds awarded	$30,980.50
Total amount of non-federal match funds	$30,980.50
Total Project Cost	$61,961.00

Total Grant Reimbursements through June 30, 2013:

$14,443.00



Project Partners:

Diamond Cattle Co., LLC
Bureau of Land Management

Photograph(s):

Completed solar powered offsite stockwater facility installed on the Robert's Creek grazing allotment.

Background:

The Roberts Creek Allotment (RCA) contains multiple areas of riparian habitat including springs, seeps, and streams. Diamond Cattle Co., LLC (DCC), owner and operator of the ranch since 1948, is the Bureau of Land Management (BLM) grazing permittee on the RCA and is currently working with BLM to improve, protect and monitor uplands and riparian habitat areas on the RCA, in turn improving water quality through decreased sedimentation and nutrient loading. During the hot months from June through September, it is very difficult to control livestock drift into riparian areas and to properly distribute cattle on the uplands due to lack of water availability elsewhere on the allotment. The Eureka County Department of Natural Resources received a 319(h) Grant (Roberts Creek Allotment Water Quality and Monitoring Project) in 2010 which partially funded DCC's installation of riparian fencing, range riding, and monitoring. However, due to exclosure of the riparian area, cattle are increasing use in other riparian and upland areas in their search for water. In order to maximize the effectiveness of riparian fencing, range riding, and rangeland management, off-site water sources must be developed.

Project Description, Goals and Objectives:

Task 1: Install stock well, solar pumping system, and associated tank and trough on private land owned by Diamond Cattle Co., LLC (see attachments)

Task 2: Riparian and upland monitoring and analysis of effectiveness of the off-site livestock watering facility and livestock management in improving riparian conditions and rangeland health.

Task 3: Submit deliverables including 1) photographs of completed off-site livestock watering facility, 2) riparian and rangeland monitoring plan, 3) copy of data collected, and 4) analysis of effectiveness of the off-site watering facility and livestock management in improving riparian areas and rangeland health. The effectiveness analysis shall include total expected pollutant load reduction quantities for sediment, nitrogen, and phosphorus as a result of project implementation.

Loading reduction for sediment shall be reported in tons; Reductions in nitrogen and phosphorus shall be reported in pounds. The method of load reduction calculation (by direct measurement, indirect measurement, or employment of a model) shall be described in the report.

Progress in SFY 13:

Through state fiscal year 2012 permits were obtained from the Nevada Division of Water Resources which allowed for the diversion of water resources and construction of the offsite stockwater facility. Delays in permit issuance required the state to extend the term of the contract an additional year.

A monitoring plan for the project area within the grazing allotment that follows BLM's Multiple Indicator Monitoring (MIM) protocol was designed and has been implemented since 2010. Wild horse use in addition to cattle grazing appears to be impacting the site. The inability to control horse use in specific riparian areas is complicating the project's monitoring effort.

The offsite livestock watering facility has been constructed and is operational, but rangeland in the vicinity of the well and tank has burned. Consequently, livestock are not currently utilizing the burned-over range; The BLM grazing permit has been deferred for up to two growing seasons. Once adequate grazing

forage returns to the allotment, livestock will be turned out and the watering facility will become available for use. To gauge the effectiveness of the grazing management strategies employed, monitoring of forage utilization will resume.

In the fall of 2012, the Frazier Creek Wildfire swept through a portion of the Roberts Creek Allotment on which the watering facility was constructed. With significant forage area burned, cattle were not allowed to be turned out on the allotment in 2013. As a result, not until adequate grazing forage returns can monitoring of the allotment resume. Future monitoring will be necessary to determine the effectiveness of the Grazing Management Strategies employed, including installation of the watering facility. Due to the impacts of wildfire on the project scope of work, a term extension requested by the county was approved.

Load reductions/outcomes/or ongoing:

Load reductions have yet to be provided with respect to this project. Project monitoring continues, and monitoring results (including a load reduction estimate) are anticipated to be provided at the conclusion of the project.

Death Valley Basin

Project title and Contractor:

Upper Amargosa River Restoration, DEP 12-021

The Nature Conservancy

Primary Contact:

James Moore
The Nature Conservancy
1771 East Flamingo Rd. Suite 104A
Las Vegas, NV 89119

Project Location:

Death Valley Basin
Oasis Valley
1890202 Upper Amargosa

Project Summary:

The primary goal of this project is to restore natural topography and form and function of the Upper Amargosa River through the Town of Beatty. The morphologic restoration will reduce flood velocities and water depth and thereby the property-damaging effects of floodwaters in the future. Additionally, the restoration of native tree vegetation along the stream channel will protect private property and slow down the velocity of future flood events allowing for water to spread out within the newly restored river channel and recharge the groundwater basin below. Currently the water rushes through town at high velocity with great potential for private property and transportation infrastructure damage before it exits Oasis Valley and enters Amargosa Valley below the Narrows.

Start and Completion Dates:

February 14, 2012 – December 31, 2013

Fiscal Summary:

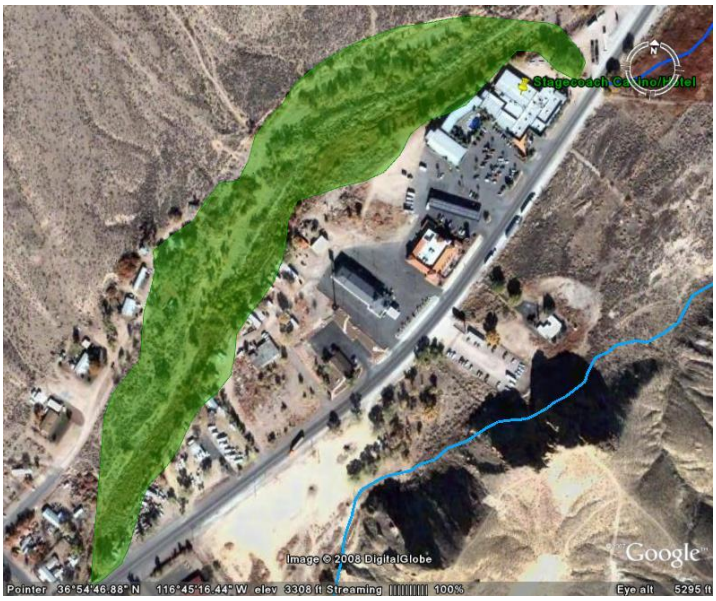
319(h) funds awarded	$24,922.00
Total amount of non-federal match funds	$25,598.00
Total Project Cost	$50,520.00

Total Grant Reimbursements through June 30, 2012:

$20,220.36

Project Partners

The Nature Conservancy
U.S. Fish and Wildlife Service
STORM-OV
Beatty Habitat and Trails Program
Stagecoach Casino/Hotel



Aerial view of project site

Background:

This project will restore essential riparian function to a heavily modified perennial desert river system in the Mojave Desert. This riparian system also serves as essential habitat for some of the most isolated and imperiled native Nevadan species, such as the Amargosa Toad and the Oasis Valley Speckled Dace. Past well-meaning efforts to control periodic flood damage to private property has resulted in a dysfunctional river system through the Town of Beatty. This causes reduced and discontinuous riparian habitat for several native species that were petitioned for federal listing but successfully kept off the list through the cooperative conservation efforts of many of the partners involved in this project. There are important ancillary benefits of providing community education about the role of a proper functioning river system in the desert and its relationship to groundwater recharge. This project will serve as a real-world model for riparian restoration and cooperative habitat conservation in rural communities that should be emulated throughout the State of Nevada and the West.

Project Description, Goals and Objectives:

The floodplain stream channel consisting of approximately 1,000 linear feet will be recontoured with dips and swales to mimic natural floodplain topography. Native willows, mesquites and cottonwoods will be planted on the stream banks and sporadically throughout the stream channel to encourage sinuousity of the streamflow and to reduce the energy generated by future flood events. Rip-rap will be installed along the channel banks to protect the handful of private property owners who have in the past suffered from significant property damage from 50 and 100-year flood events in recent decades. A community education program will be developed to reach out to the residents and school-age kids to teach about the value of naturally functioning riparian systems in a desert ecosystem and the services provided by that system.

Tasks

1. Pre-construction surveys of the entire stretch of river will be required to ensure no breeding birds are present within the project area, particularly rare, threatened or federally listed species such as the Southwest Willow Flycatcher. Additionally, nighttime and daytime surveys of the terrestrial area will be made to minimize the likelihood of destroying or harming any Amargosa Toads which are living in the vicinity.

2. Removal of the berm will occur once the project area is cleared of sensitive biological elements using trackhoes and bulldozers to begin clearing out the artificial berm material. Some material will be utilized to bolster the banks of the Stagecoach Casino/Hotel since this was the origin of the material when the berm was created in 1970.

3. Restorative rip-rap will be added to the outer wall of the banks of this property to further solidify the bank against future flood events.The remainder of the material will be utilized in ongoing right-of-way work conducted by NDOT along US Highway 95 north of Beatty, or disposed of on the property adjacent to the Stagecoach Casino that has requested such appropriate fill material.

4. Revegetation tasks will occur by removing the existing tamarisk trees within and along the stream channel and replacing them with the willows, cottonwoods and mesquite trees currently present in the area, but that are blocking the desired channel configuration.

5. Recontouring of the resulting stream channel with shallow dips and swales built into the stream to mimic the naturally occuring topography of this type of desert riparian channel like elsewhere in the Oasis Valley north of this project area. Perennial spring flows coming off the Revert Springs property on the east side of Hwy 95 will be directed into this new stream channel system.

6. Develop a community outreach/education program, in collaboration with with the Amargosa Toad Working Group (ATWG), to teach and inform the residents and school-age children of Beatty about how a properly functioning desert riparian system benefits the quality of their lives - from property protection, aesthetics, tourism enhancement, groundwater recharge, and native species habitat creation perspectives.

Progress in SFY 12:
The in-channel work is 75% completed. The project is set to be completed by 12/31/13.

Load reductions/outcomes/or ongoing:
Load reductions have yet to be provided.

Load Reductions & Conclusion

During the reporting period of SFY 2013, NDEP's NPS Program administered 319(h) Grant C9-979081-12. This report documented the activities and accomplishments of the Nevada Division of Environmental Protection (NDEP), Nonpoint Source Pollution Management Program (NPS Program) and other state, federal, and local agencies in addressing NPS issues in Nevada. The NPS Program made progress in reducing nonpoint source loading of nitrogen, phosphorus and sediment, as documented in Table 6: NDEP's Reported Load Reductions. Please note that the load reductions are reported for the calendar year, not the State Fiscal Year. Projects with associated load reductions were entered into EPA's Grant Tracking and Reporting System (GRTS) and all quarterly and annual reporting requirements under 319(h) were met.

Table 6: NDEP's Reported Load Reductions

Nitrogen lbs/yr	**276,559**
Phosphorus lbs/yr	**78,361**
Sediment tons/yr	**11,179**

The NPS Program in Nevada utilizes the resources they are allocated to maximize load reductions in our waterways, even in light of significant constraints and unique NPS challenges. Nevada's NPS Program will continue to make the best use of 319(h) funds while focusing efforts on building local support to develop watershed based plans in those priority watersheds that do not yet have them. EPA's support in reducing the greatest threat to Nevada's water quality is appreciated and NDEP hopes to continue a successful partnership with EPA to continue these efforts.